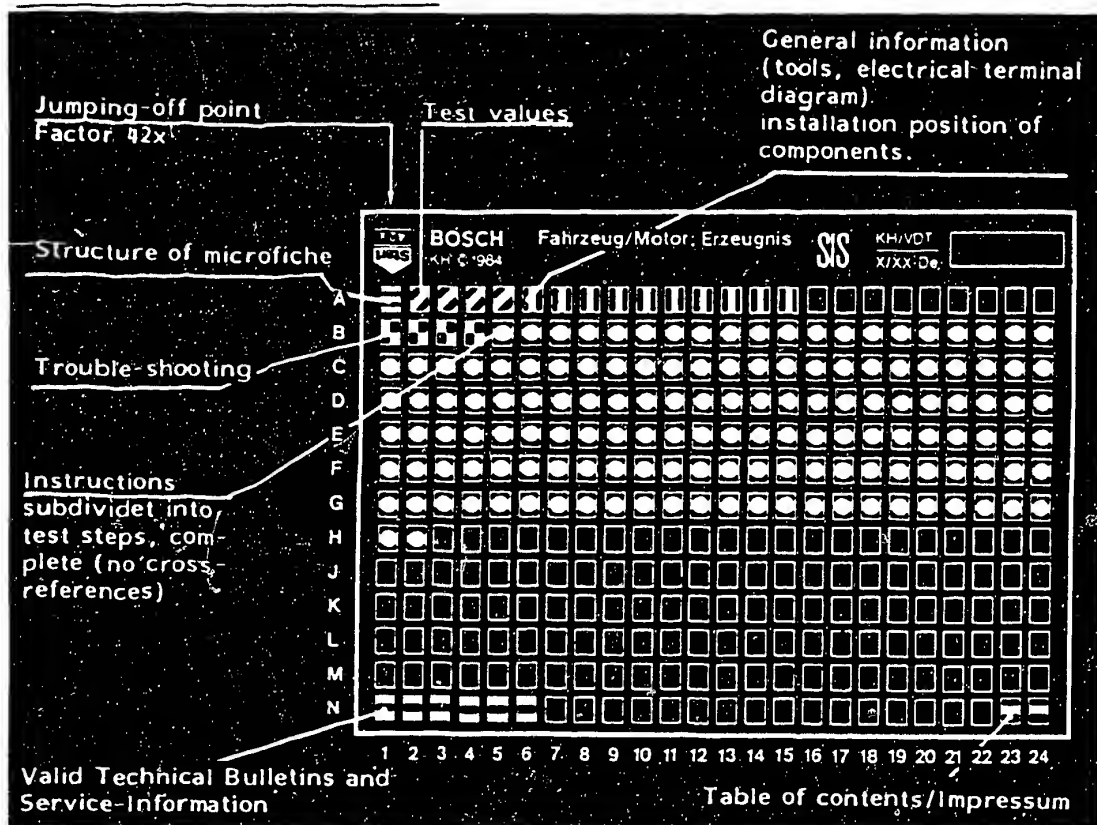


## Structure of microfiche



1. Read from left to right
2. Title of microfiche (appears on each coordinate)

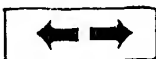
<b>E16</b>	Product/component/test step
	Vehicle/engine

Coordinate

3. Limits of section



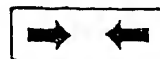
Beginning



Mid-section



End



One-page section

4. Purely vehicle-specific passages in the text are marked with a vertical bar.

5. Reference to relevant working steps in the test specifications, e.g. coordinate C6.

**C6**

**A1**

Trouble-shooting program



## 1. Test specifications

### 1.1 Idle speed:

505D	800...850 min <sup>-1</sup>
505/604D-Turbo	850...900 min <sup>-1</sup>
Fast idle	1250...1300 min <sup>-1</sup>

**C9**

### 1.2 Nozzle opening pressure:

505D	120 + 5 bar
505/604D-Turbo	130 + 5 bar

**C14**

### 1.3 Filter test

max. allowable  
differential pressure: 0.3 bar

**C21**

### 1.4 Compression loss: max. allowable 25 %

**D18**

### 1.5 Charge-air pressure:

0.4...0.6 bar (XD2S, 2.3 l)  
0.6...0.8 bar (XD3T, 2.5 l)  
(505/604D-Turbo)

### 1.6 Compression pressure: 25...30 bar

max. deviation  
between cylinders 5 bar

**A2****Test specifications****Peugeot 505D, 505/604 Turbo-Diesel**

1.7 Injection timing:  
505/604D-Turbo (XD2S 2.3 l)

**G5**

Checking value:

Engine setting:

4th cylinder

0.77...0.83 mm BTDC

Setting value

Engine setting:

4th cylinder

0.80 mm BTDC

Checking value:

Pump setting:

0.28...0.32 mm ABDC

Setting value

Pump setting:

0.30 mm ABDC

• Injection timing:  
505D (XD 3 2.5 l)

**G5**

Checking value

Engine setting:

4th cylinder

0.69...0.75 mm BTDC

Setting value

Engine setting:

4th cylinder

0.72 mm BTDC

Checking value

Pump setting:

0.28...0.32 mm ABDC

Setting value

Pump setting:

0.30 mm ABDC

**A3**

Test specifications

Peugeot 505D, 505/604 Turbo-Diesel



- Injection timing:  
505/604 D-Turbo (XD3T, 2.5 l)

**G5**Checking valueEngine setting:

4th cylinder

0.86...0.92 mm BTDC

Setting valueEngine setting:

4th cylinder

0.89 mm BTDC

Checking valuePump setting:

0.28...0.32 mm ABDC

Setting valuePump setting:

0.30 mm ABDC

**A4**

Test specifications

Peugeot 505D, 505/604 Turbo-Diesel

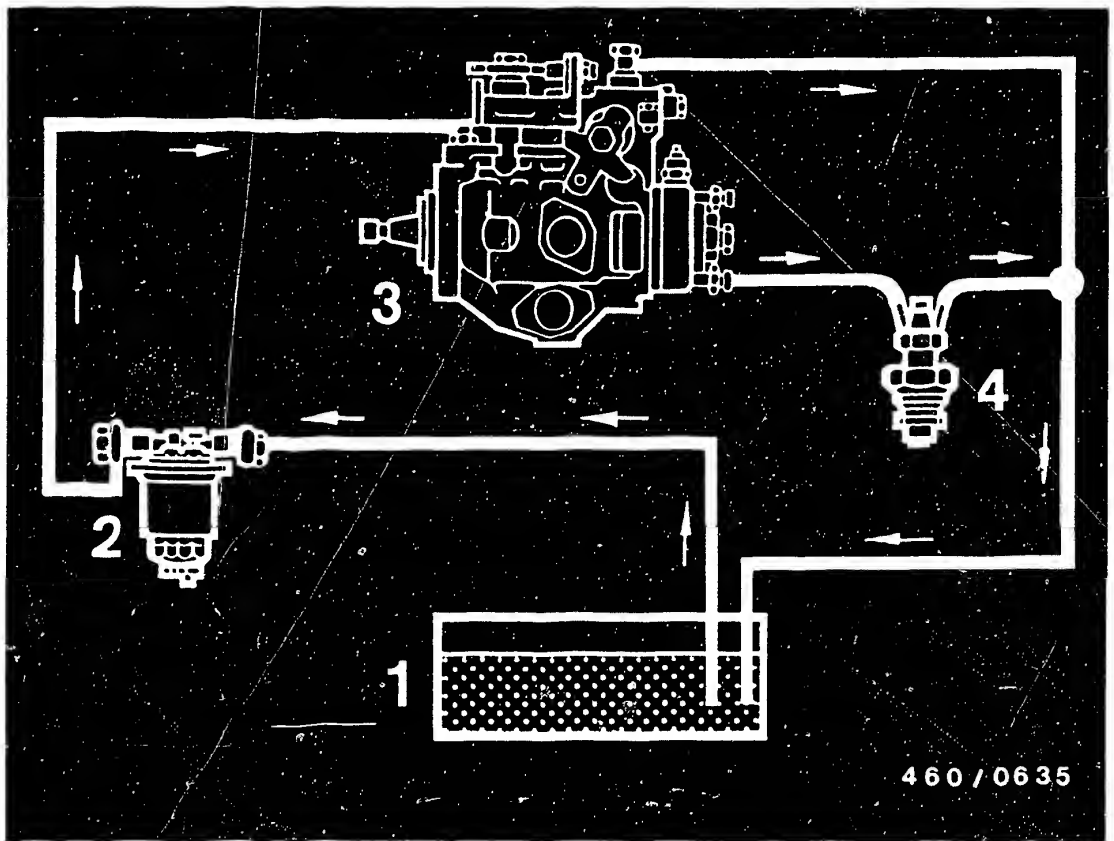




## 1.8 Tightening torques

Fuel lines	25 Nm
Fastening screws for fuel-injection pump	20 Nm
Fastening screws for nozzle holder assemblies	70 Nm
Sheathed-element glow plugs	25 Nm
Support bracket for the fuel-injection pump	20 Nm
Screw plug	15 Nm
Setting screw-rocker arm	15 Nm
Fastening nut for the crankshaft pulley	170 Nm
Cylinder head cover screws	7.5 Nm





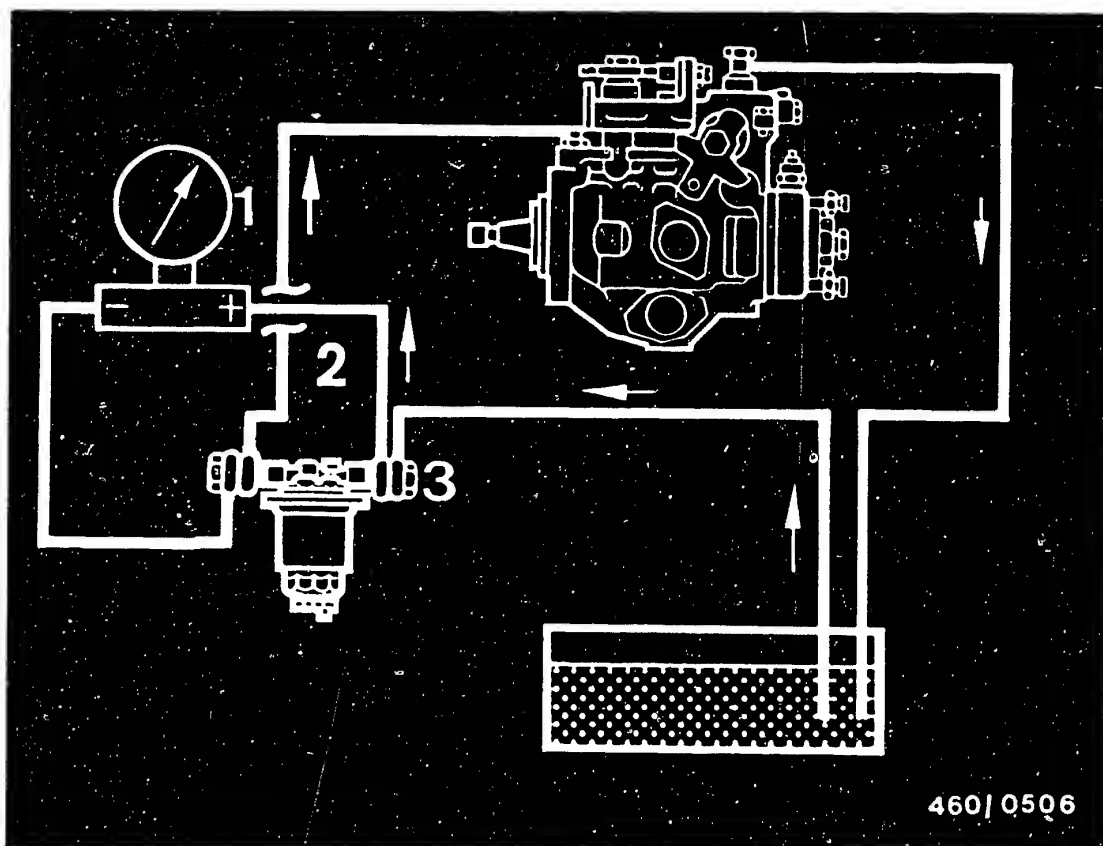
- 1 = Fuel tank
- 2 = Fuel filter
- 3 = Distributor-type fuel-injection pump
- 4 = Fuel-injection nozzles

## 2. Fuel line diagram

The fuel lines are connected as shown in the diagram above.

The fuel flows in the direction shown by the arrow.



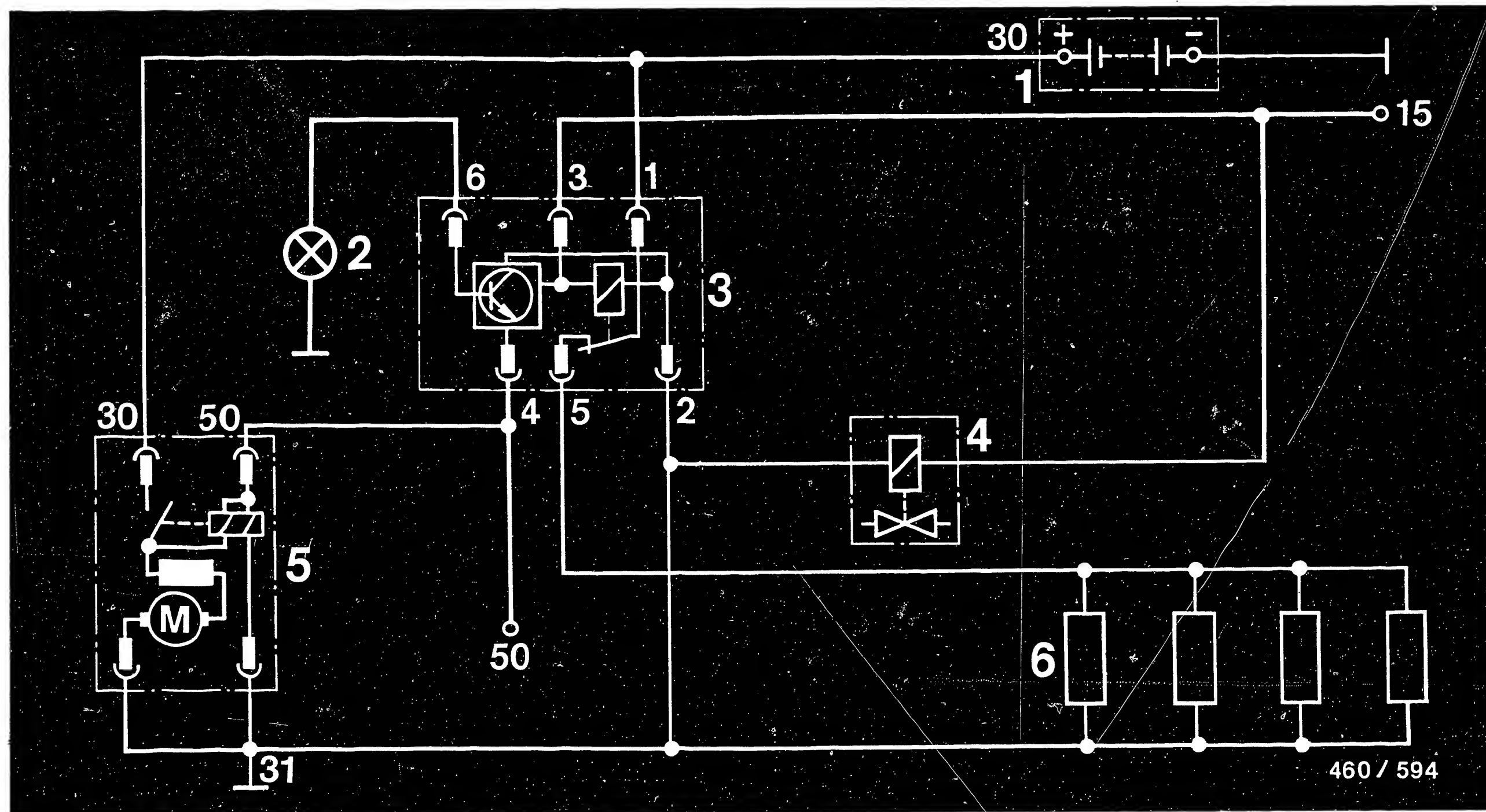


- 1 = Differential pressure gauge
- 2 = Filter outlet  
(Use inlet union and overlong inlet-union screw 2 443 456 020.)
- 3 = Filter inlet  
(Use inlet union and overlong inlet-union screw 2 443 456 020.)

### 2.1 Connection diagram for filter test

Connect the differential pressure gauge to the fuel filter using appropriate connectors.





1 = Battery  
2 = Preheater indicator light (12 V, max. 2 W)

3 = Glow duration unit  
4 = Solenoid-operated valve

5 = Starting motor  
6 = Glow plugs

3. Connection diagram for the preheater system

#### 4. Test equipment and tools

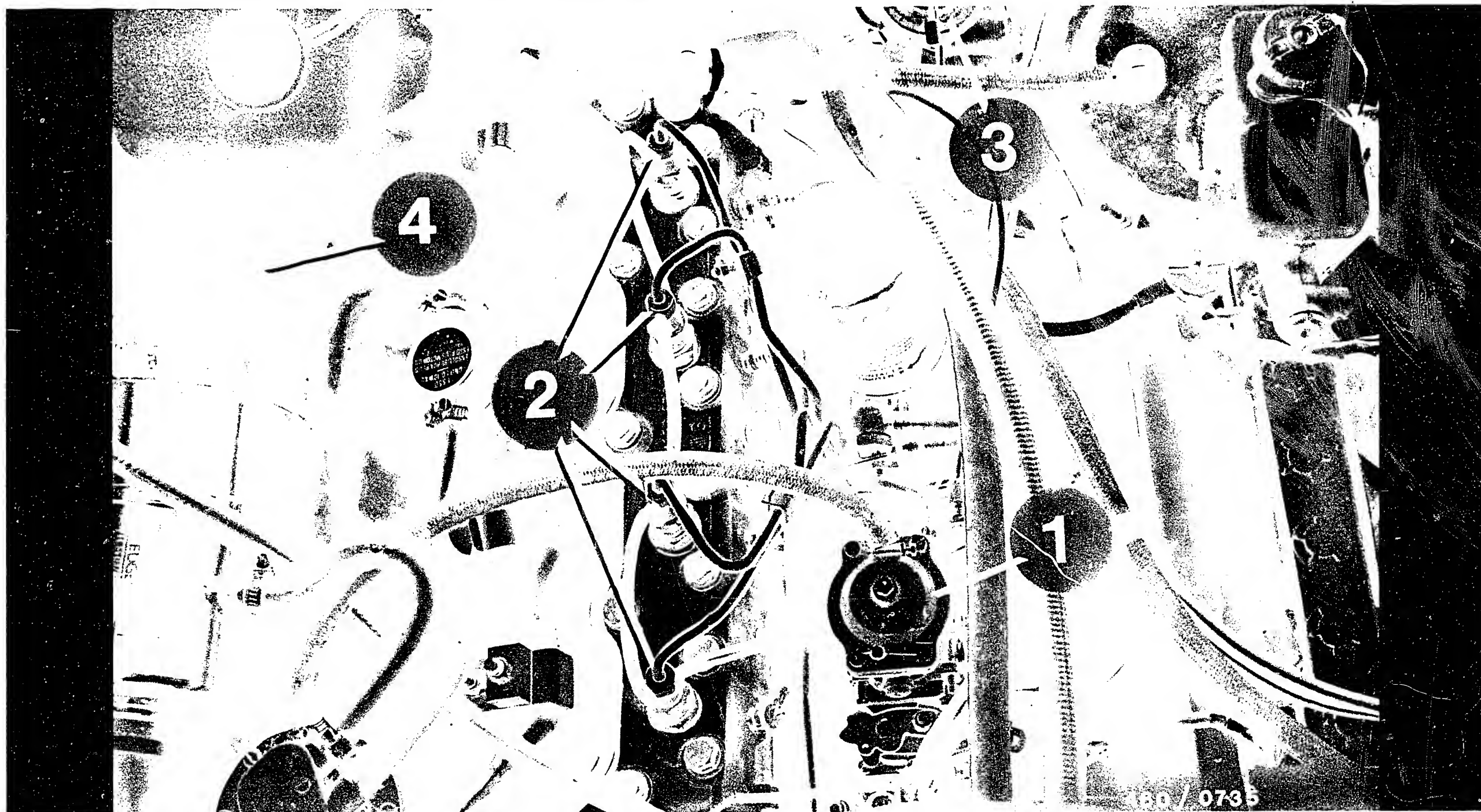
Designation	Part No.	Use
Peugeot tool	8.0105 Y	Removal of valve spring
Pressure tester or pressure gauge 0 ... 1.6 bar	KDJE-P 100  e.g., Wika No. 4 184	Checking charge-air pressure
Box wrench	KDEP 1115	Releasing or tightening fuel-injection lines
Measuring tool	KDEP 2991	Injection timing
Measuring tool	KDEP 1085	Injection timing
Mini dial indicator graduation 1/100 mm	commercially available, e.g., Hahn & Kolb D-7000 Stuttgart Part No. 33 003, with adapter KDEP 1127	Injection timing



# Test equipment and tools (continued)

Designation	Part No.	Use
Nozzle tester	EFEP 60 H 0 681 200 502	Checking fuel-injection nozzles
Compression tester	commercially available	Checking engine compression
Compression loss tester	EFAW 210 A 0 681 001 901	Checking engine compression loss
Tachometer	commercially available, e.g., Dr.E. Horn GmbH Meßgerätefabrik Postfach 40 D-7036 Schönaich Part Des.: HT 446 (with digital display)	Adjusting engine speed
Differential pressure gauge	commercially available, Part No. NG 160/311-911 -1.0 + 4.0 bar Haenni Nauheimer Str. 78 - 80 D-7000 Stuttgart 50	Filter test
Evaluation unit accessory box, with metering device	0 684 102 050 0 681 169 038	Exhaust gas test





1 = Fuel-injection pump

2 = Fuel-injection nozzles

3 = Fuel filter

4 = Air filter

5. Installation position of the components (XD 2 S - 2.3 l engine) 505/604 Turbo-Diesel (2.79-6.83)

**A12**

Installation position of the components  
Peugeot 505D, 505/604 Turbo-Diesel

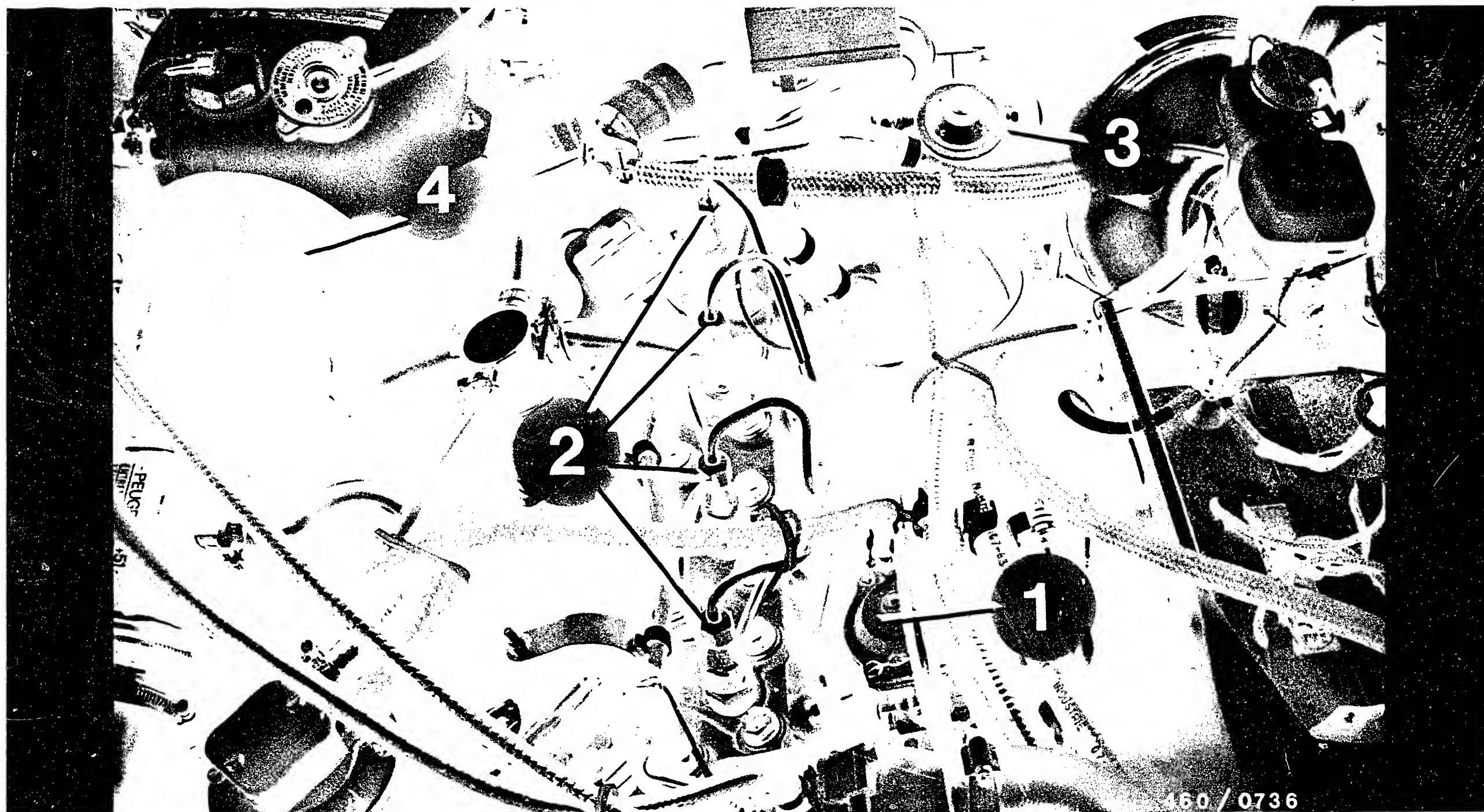


**A13**

Installation position of the components  
Peugeot 505D, 505/604 Turbo-Diesel







1 = Fuel-injection pump

2 = Fuel-injection nozzles

3 = Fuel filter

4 = Air filter

5.1 Installation position of the components: (XD 3 T - 2.5 l engine) 505 / 604 Turbo-Diesel (6.83 →)  
 (XD 3 - 2.5 l engine) 505D, without manifold-pressure compensator (6.81 →)

**A14**

Installation position of the components  
 Peugeot 505D, 505/604 Turbo-Diesel



**A15**

Installation position of the components  
 Peugeot 505D, 505/604 Turbo-Diesel





## 6. Trouble-shooting

### Customer complaint (defect symptom)

1. Engine does not start when warm, or starts only with difficulty						Cause (component defect)	Coordinates
2. Engine does not start when cold, or starts only with difficulty							
3. Engine "hunts" at idle							
4. Rough idle with engine warm							
5. Engine missing in driving operation							
6. Unsatisfactory driving performance							
●	●			●	●	Tank empty; tank vent clogged	B 5
	●					Cold-start accelerator not activated	B 8
	●		●			Fuel-injection sequence differs from firing sequence (check how fuel-delivery lines are laid)	B 7
				●		Overflow restriction clogged	B 8
●	●					Shutoff device defective	B 9
		●		●	●	Inlet-union screws for the intake and return lines clogged (see fuel line diagram)	B 12
●	●		●	●	●	Air in the fuel system	B 14
	●					Heavy paraffin deposit in the filter in winter operation (take out and replace filter box)	B 17
●	●			●	●	Lines leaking or broken; connections loose	B 22
●	●			●	●	Supply lines, fuel-injection lines clogged or restricted (check fuel lines)	B 24
					●	Engine air filter clogged	C 1
			●			Incorrect idle speed	C 9
●	●		●		●	Fuel-injection nozzle defective	C 14
	●		●		●	Injection timing	G 5
●	●			●	●	Fuel filter clogged (differential pressure test)	C 21
	●					Preheating system defective	C 24
					●	Timing device defective (take out fuel-injection pump)	D 17
	●		●			Engine compression poor or uneven	D 18
					●	Incorrectly adjusted maximum speed (take out fuel-injection pump)	E 4
●	●	●	●	●	●	Fuel-injection pump (governor) defective or incorrectly set (take out fuel-injection pump)	E 4
					●	Check turbocharger for leaks and charge-air pressure	G 19

**B1**

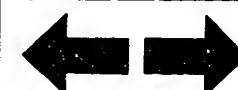
Trouble-shooting chart

Peugeot 505D, 505/604 Turbo Diesel


**B2**

Trouble-shooting chart

Peugeot 505D, 505/604 Turbo Diesel



# Trouble-shooting (continued)

## 7. Poor mileage

### 8. Engine cannot be shut off

#### 9. Engine runs hard, black exhaust gases in full-load range; possibly inadequate power

#### 10. Fog-like exhaust gases in full-load range (white)

#### 11. Incorrect engine speeds

#### 12. Engine does not accelerate when cold

#### 13. Distributor-type fuel-injection pump becomes too hot

							Cause (component defect)	Coordinates
			●		●		Tank empty; tank vent clogged	B 5
					●		Cold-start accelerator not activated	B 8
		●		●	●		Fuel-injection sequence differs from firing sequence (check how fuel-del. lines are laid)	B 7
						●	Overflow restriction clogged	B 8
	●						Shutoff device defective	B 9
			●	●	●		Inlet-union screws for the intake and return lines clogged (see fuel line diagram)	B 12
			●		●		Air in the fuel system	B 14
					●		Heavy paraffin deposits in the filter in winter operation (take out and replace filter box)	B 17
●							Lines leaking or broken; connections loose	B 22
			●		●		Supply lines, fuel-injection lines clogged or restricted (check fuel lines)	B 24
		●					Engine air filter clogged	C 1
				●			Incorrect idle speed	C 9
		●					Fuel-injection nozzle defective	C 14
●		●	●		●		Injection timing	G 5
			●		●		Fuel filter clogged (differential pressure test)	C 21
		●	●				Timing device defective (take out fuel-injection pump)	D 17
●					●		Engine compression poor or uneven	D 18
				●			Incorrectly adjusted maximum speed (take out fuel-injection pump)	E 4
●	●	●	●	●	●	●	Fuel-injection pump (governor) defective or incorrectly set (take out fuel-injection pump)	F 4

**B3**

Trouble-shooting chart

Peugeot 505D, 505/604 Turbo Diesel

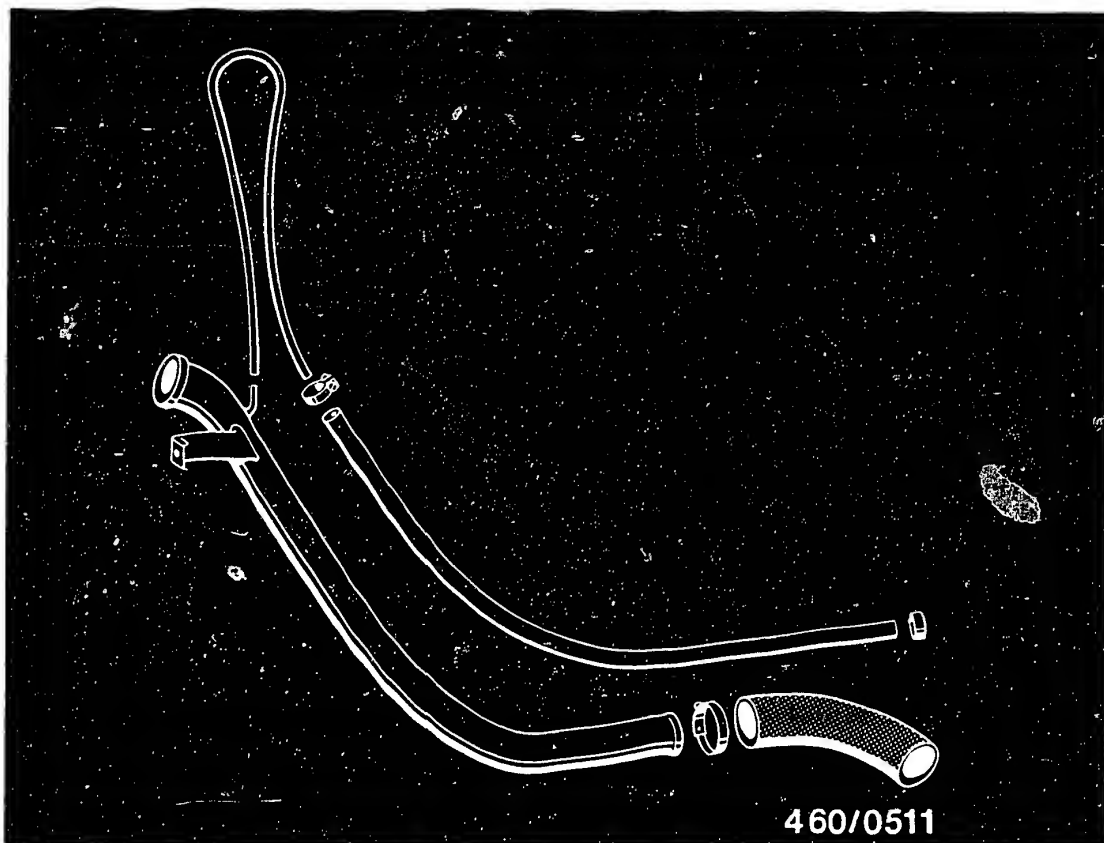


**B4**

Trouble-shooting chart

Peugeot 505D, 505/604 Turbo Diesel





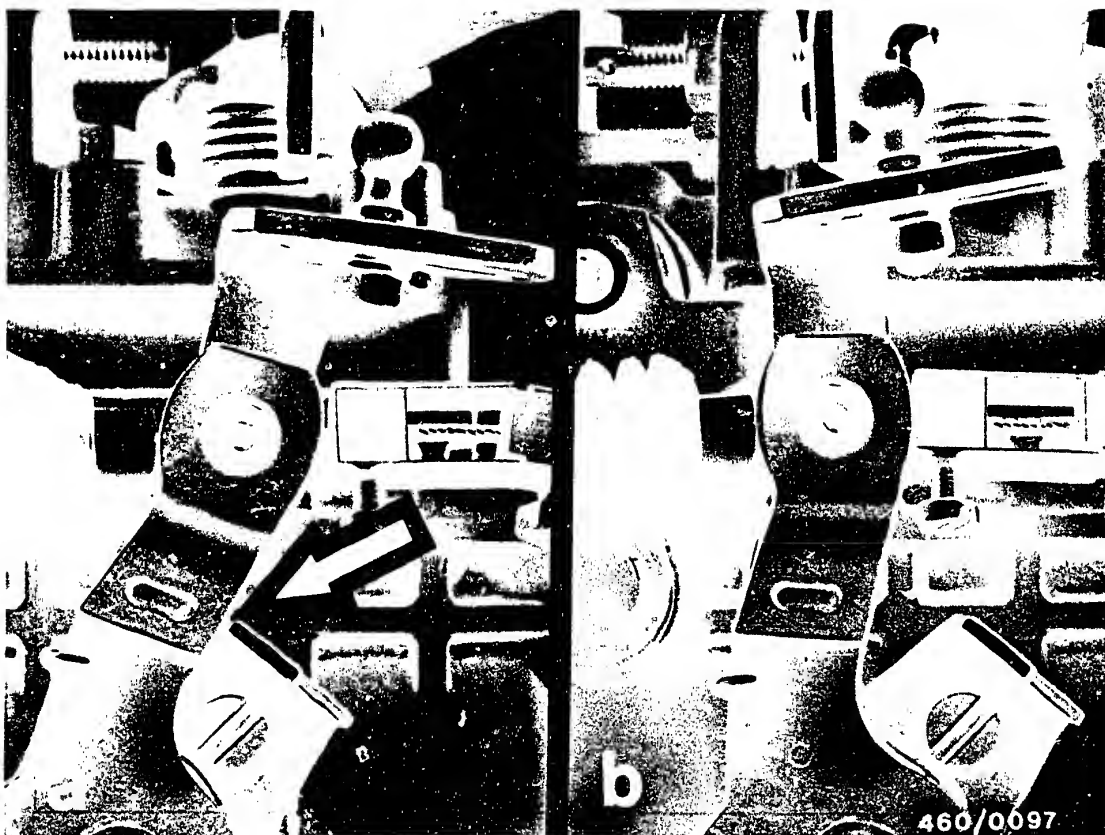
### 7. Check tank vent

Open the tank cap.

If the defect no longer occurs when the tank cap is open, the tank vent is defective.

Remove the hoses for the tank vent (Figure and check for clogging or restrictions).

If need be, check the connecting pipe at the tank.



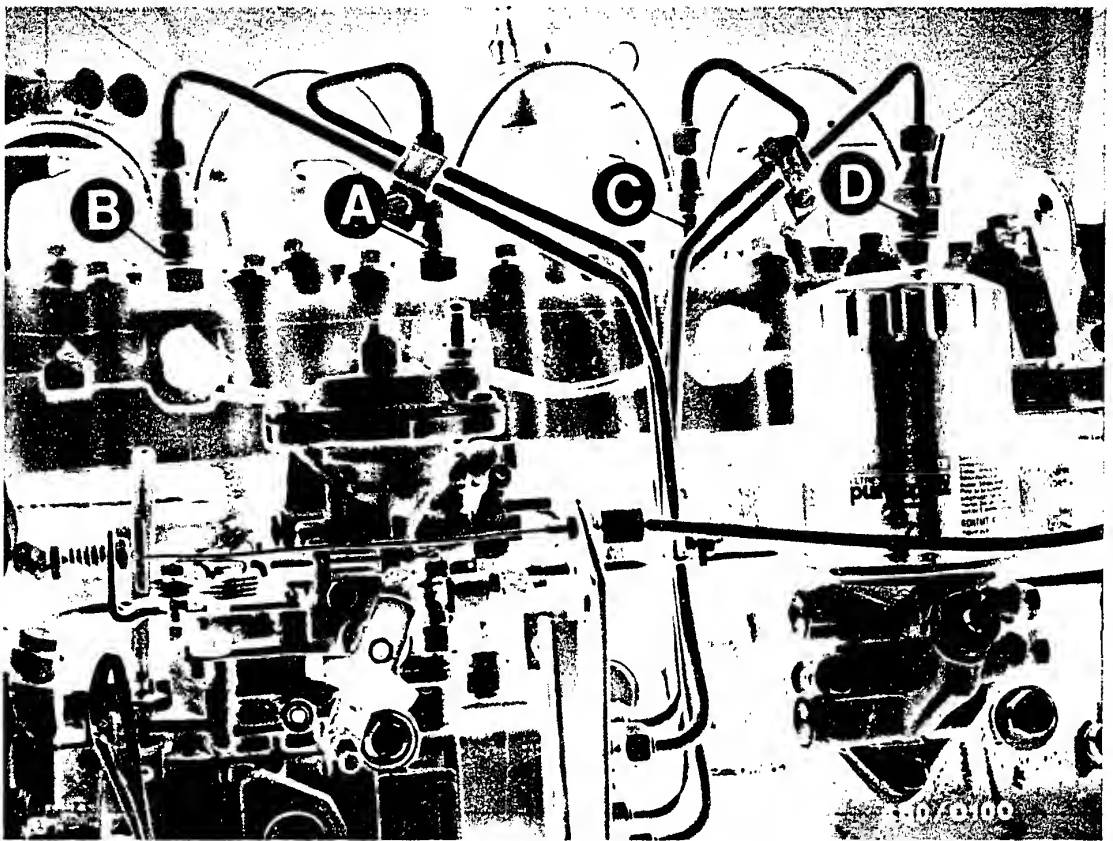
# 8. Checking operation of the cold-start accelerator XD3T 2.5 l engine

If the cold-start accelerator is set correctly, the control lever for the cold-start accelerator must lie against the stop bracket (Figure a, arrow) when the engine is at normal operating temperature (cooling water temperature approx. + 80°C).

When the engine is cold, the control lever for the cold-start accelerator has reached its maximum working stroke (Figure b).

If the control lever when cold stays at the stop bracket or only moves slightly, the fuel-injection pump must be taken out and readjusted.





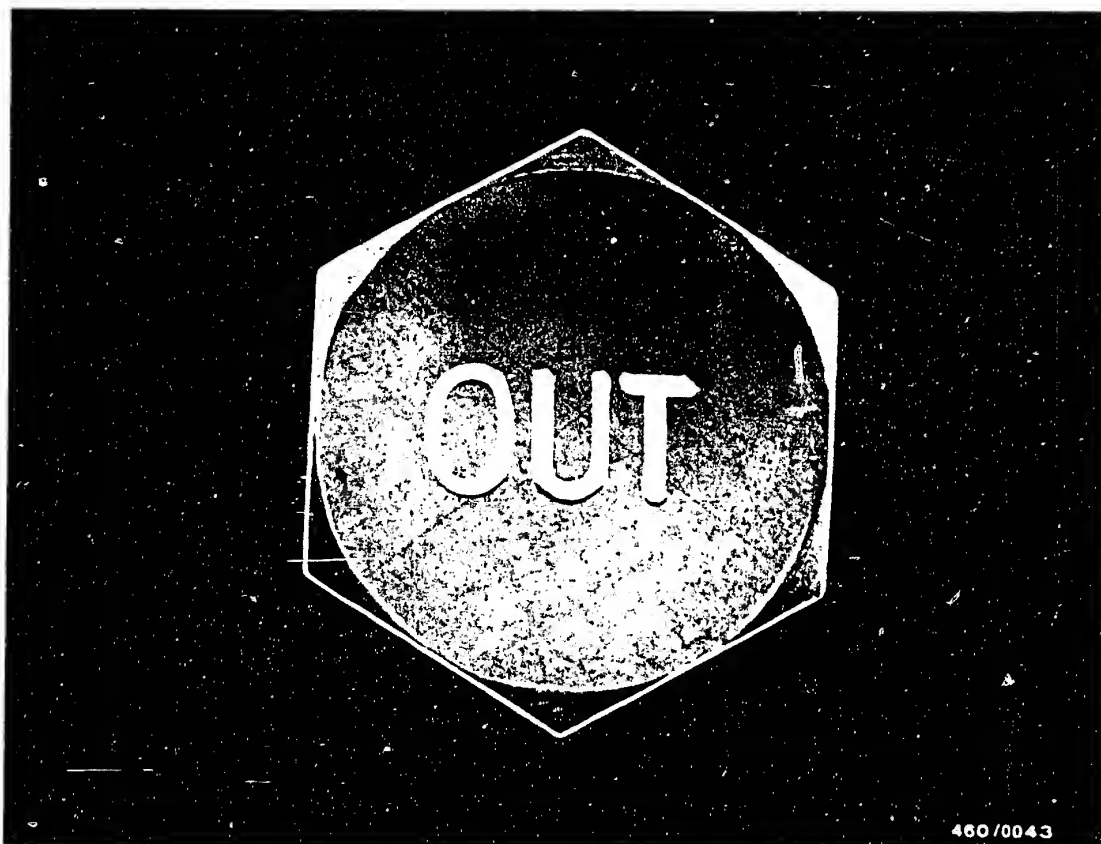
### 9. Checking how fuel-delivery lines are laid

The fuel-delivery lines are connected to one another by means of clips to prevent mistaking the outlets one for the other.

If confusion still occurs, check how the lines are laid against the figure at the top.

Assignment of the fuel-injection pump outlets to the individual engine cylinders is identified by means of the letters A to D.





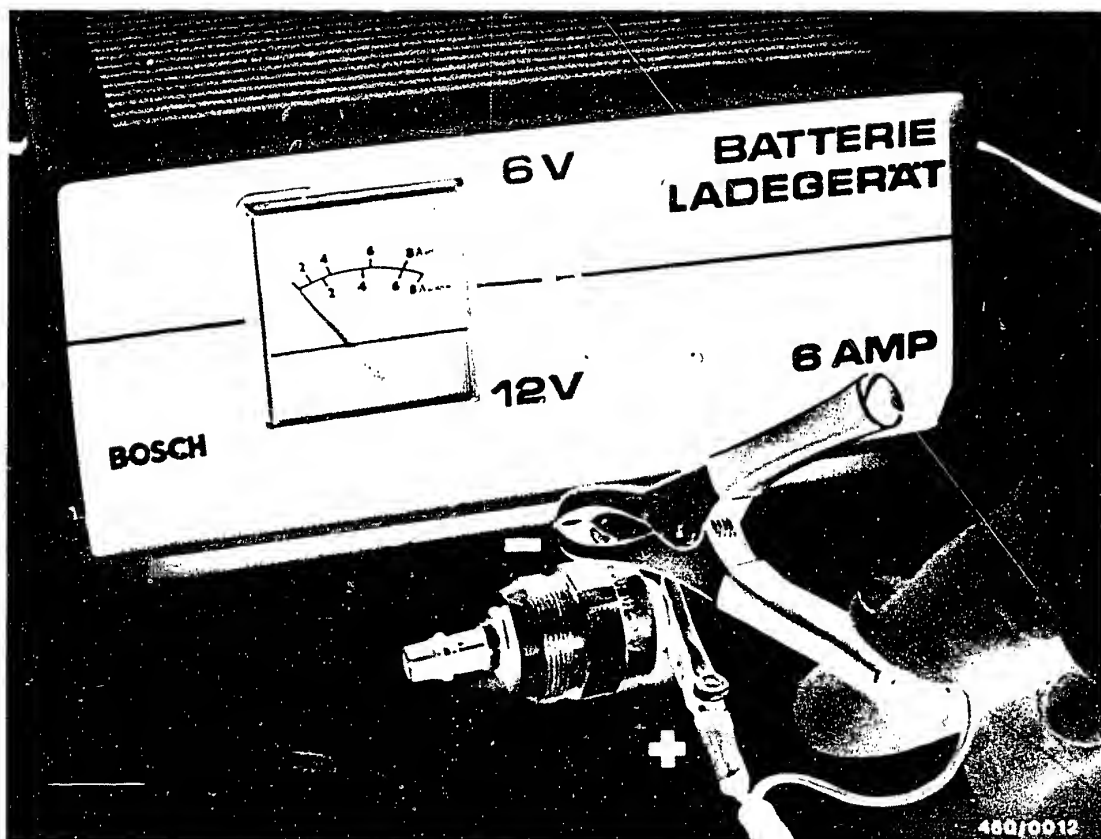
#### 10. Checking the overflow restriction

Unscrew the overflow restriction on the fuel-injection pump (identified with "out").

Inspect the wire filter installed visually for dirt.

If there is doubt, take out and replace the overflow restriction.





## 11. Checking operation of the shutoff device

### 11.1 Engine does not start

Check that the solenoid-operated valve is being supplied with voltage (min. 10 V) when the glow-plug and starting switch is switched on (driving position).

If there is voltage present, take out the fuel-injection lines and remove the solenoid-operated valve.

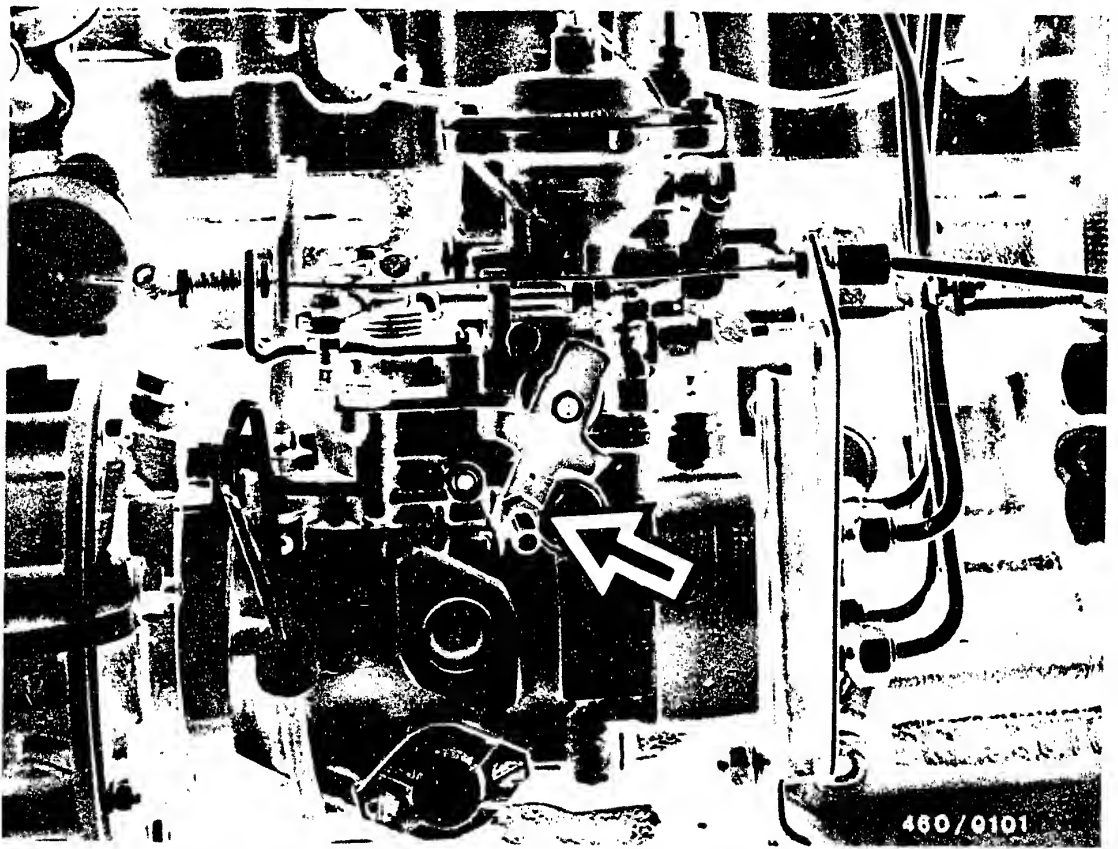
Be careful to be neat and clean in so doing!

Check the operation of the solenoid-operated valve after it has been taken out.

#### Note:

When the solenoid-operated valve has been taken out, it may be supplied with voltage only for a short time, because there is no fuel cooling.





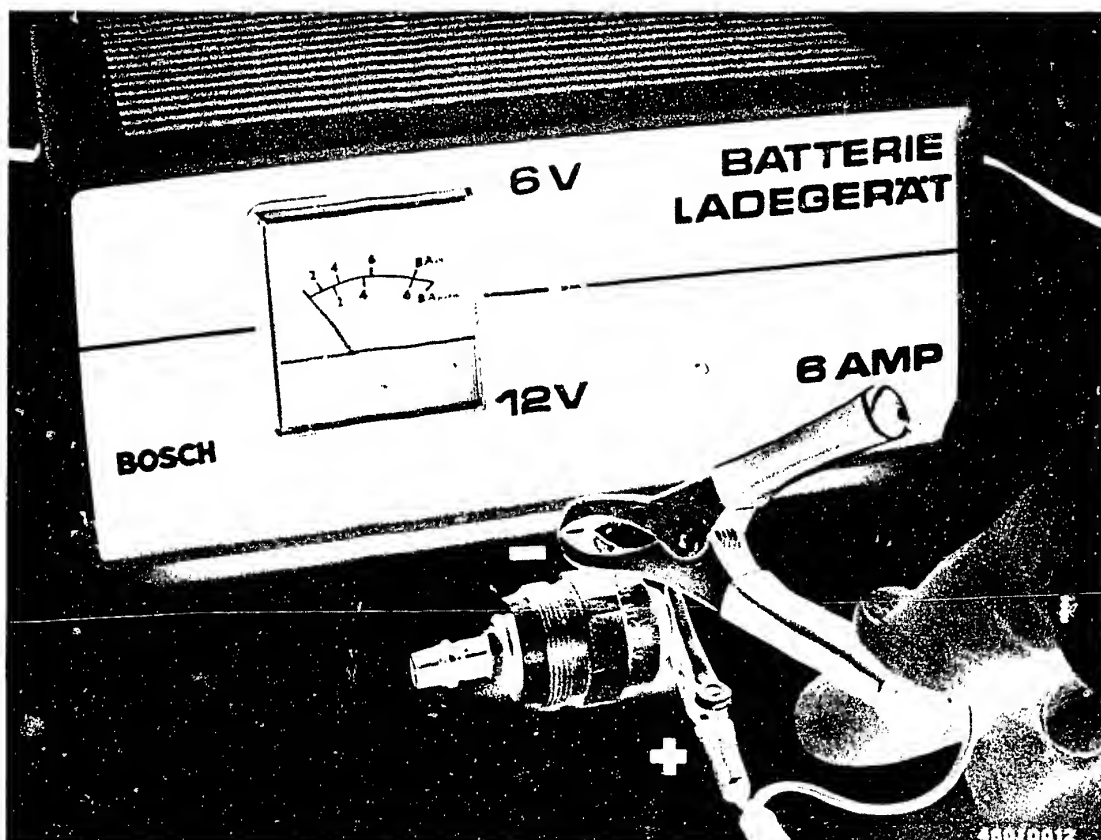
### 11.2 The engine cannot be shut off

When the glow-plug starting switch is in the stop position, it is not permissible for there to be any voltage at the solenoid-operated valve, i. e., the supply of fuel to the distributor plunger is interrupted.

If the engine continues to run even though there is no voltage at the solenoid-operated valve, operate the emergency shutoff lever (arrow) on the fuel-injection pump.







### 11.3. Checking the solenoid-operated valve

Remove the fuel-injection lines.

Take out the solenoid-operated valve.

Be careful to be clean and neat in so doing!

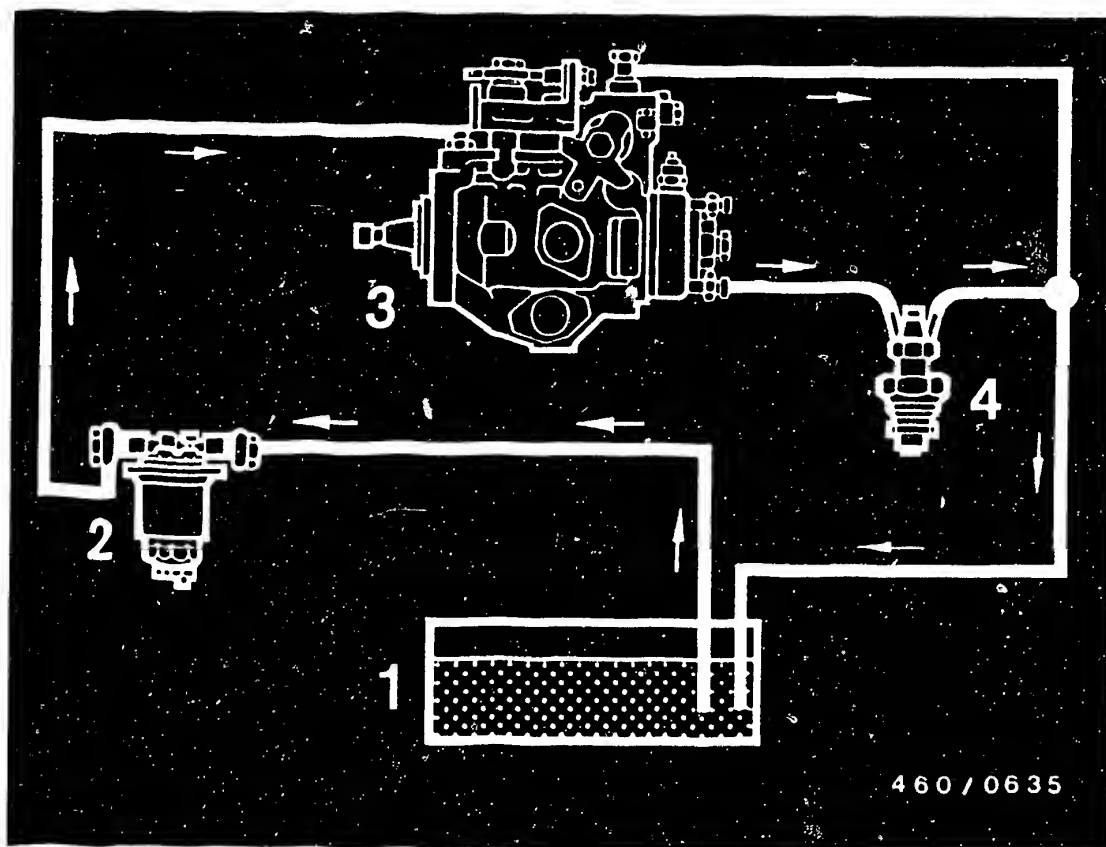
Check the operation of the solenoid-operated valve when it has been taken out of the vehicle.

#### Note:

After the solenoid-operated valve has been taken out, it may be supplied with voltage only for a short time, because there is no fuel cooling.

Check the valve seat in the hydraulic head (visual inspection).





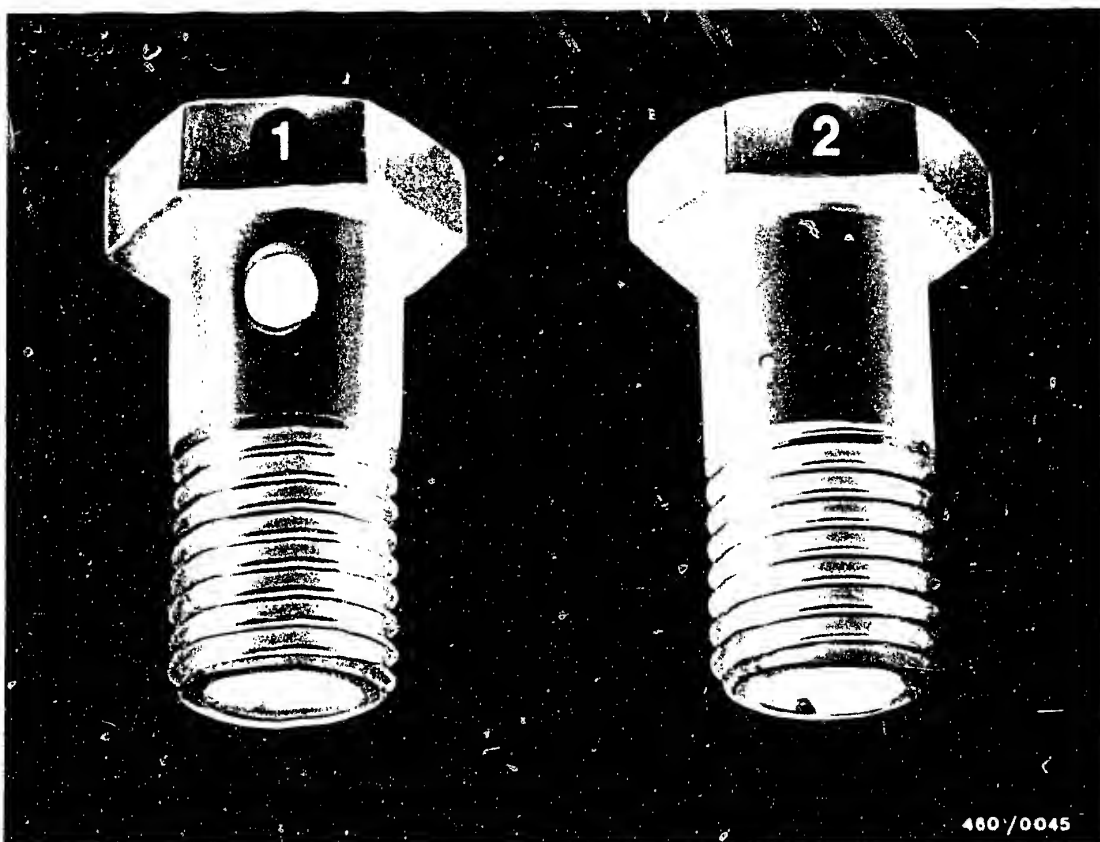
- 1 = Fuel tank
- 2 = Fuel filter
- 3 = Distributor-type fuel-injection pump
- 4 = Fuel-injection nozzles

## 12. Connection diagram for the fuel lines

The fuel lines have been connected as shown in the diagram above.

The fuel flows in the direction shown by the arrows.

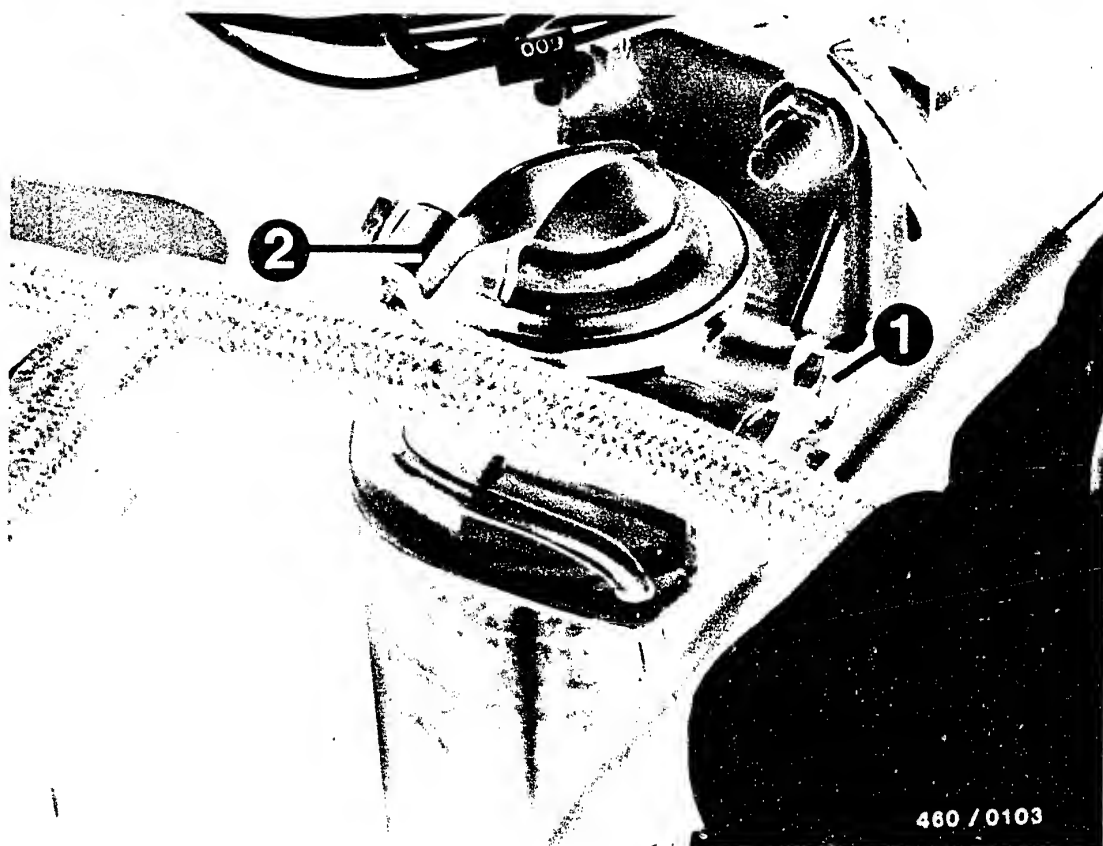




At the connections for the fuel-injection pump, make certain that the inlet-union screw for the fuel inlet (1) and the throttle screw for the fuel return (2) are not confused one for the other.

The throttle screw is located on the cover of the fuel-injection pump and identified by the word "out" on the screw head.





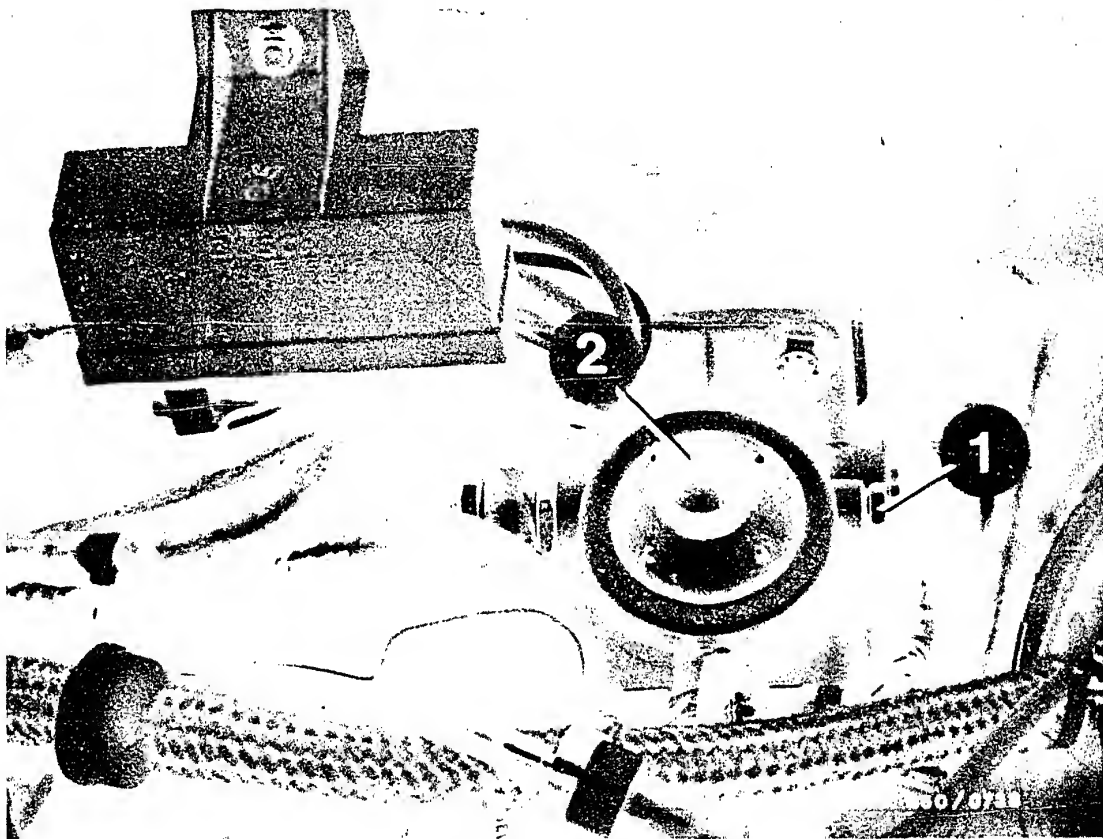
### 13. Bleed the fuel system (XD2S-2.3 l engine)

Release the bleeder screw (1) and operate the handpump (2) until the fuel coming out at the bleeder screw (1) is free of bubbles.

Retighten the bleeder screw (1).

Continue working the handpump (2) again until resistance can be felt.





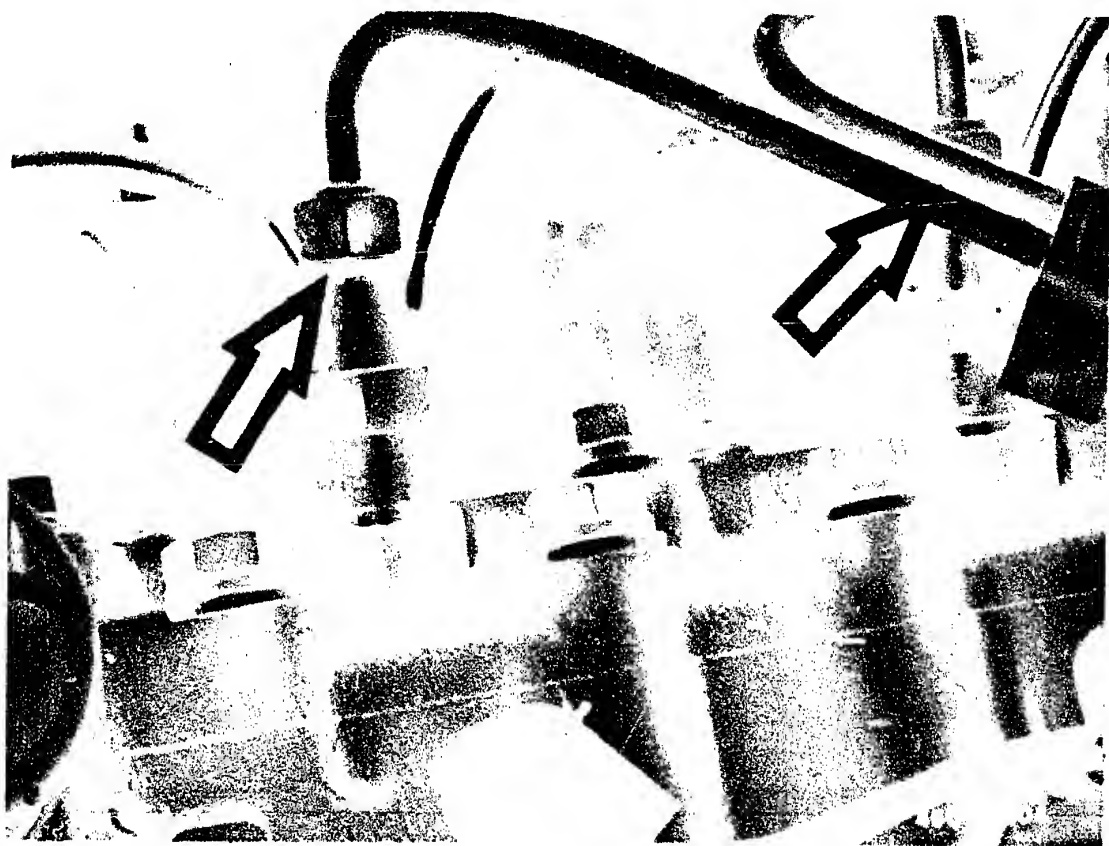
### 13.1 Bleeding the fuel system (XD3(T) - 2.5 l engine)

Release the bleeder screw (1) and operate the handpump (2) until the fuel coming out at the bleeder screw (1) is free of bubbles.

Retighten the bleeder screw (1).

Continue working the handpump (2) again until resistance can be felt.





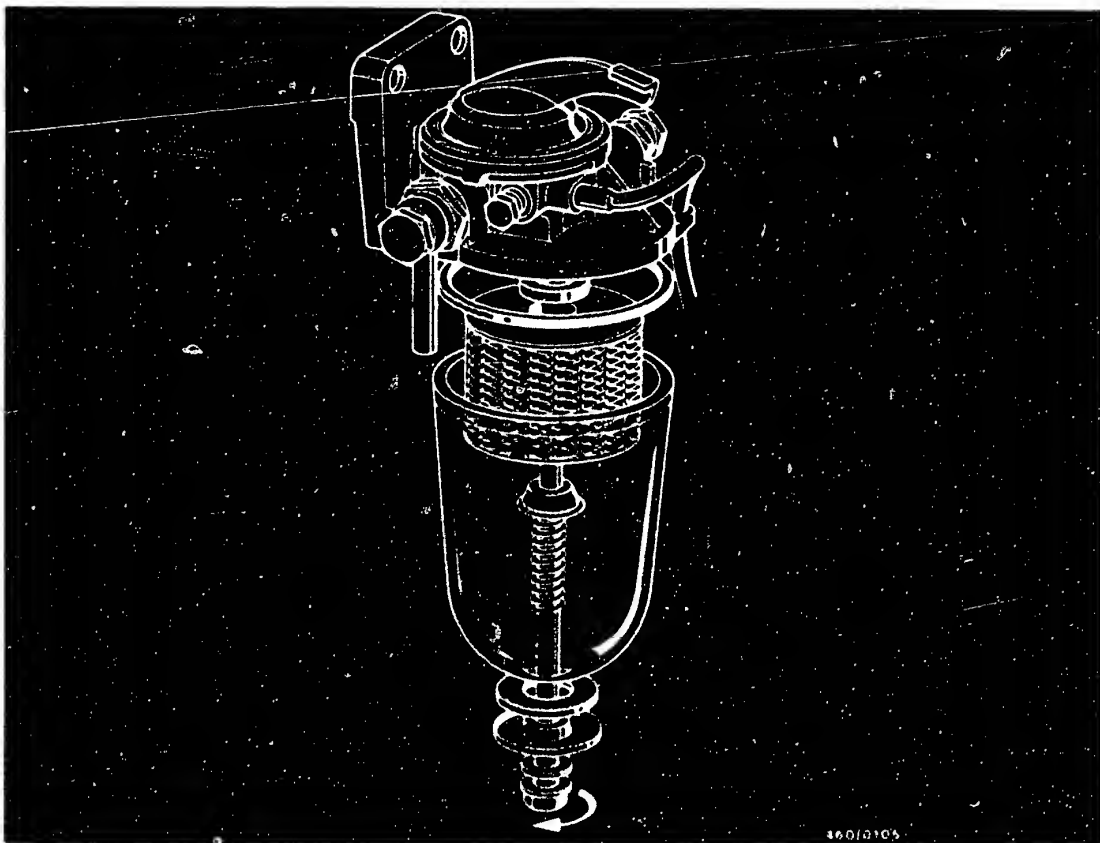
Release the union nuts of the fuel-delivery lines at the fuel-injection nozzle holder assemblies.

Operate the engine starting motor without preheating until fuel comes out at the union nuts of the fuel-injection nozzle holder assemblies.

Tighten the union nuts.

Run the starting motor until the engine starts.





#### 14. Taking out and replacing, and draining the filter box

##### 14.1 Taking out and replacing the filter box (XD 2 S - 2.3 l engine)

Unscrew the hex screw at the base of the filter.

Take off the glass container assembly downward.

Empty the glass container.

Put in a new filter cartridge and screw on the glass container using the hex bolt.

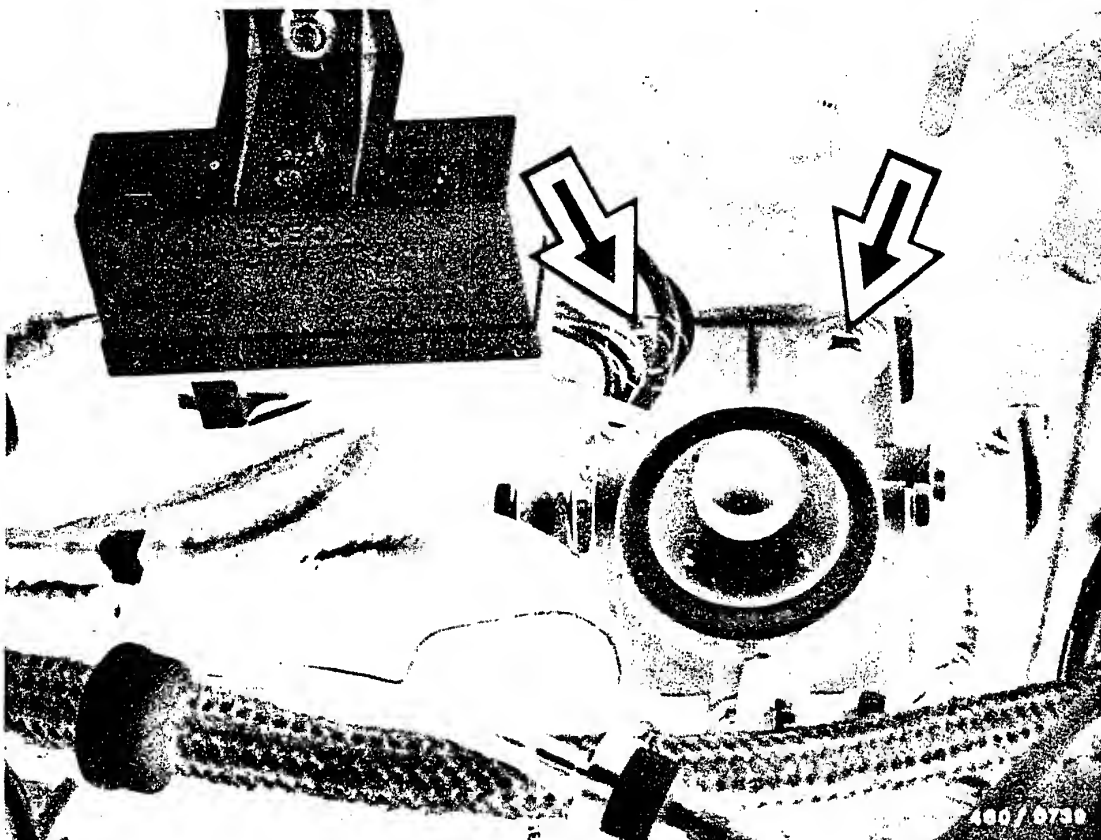
If there are heavy paraffin deposits, winter fuel must be used.

Under some circumstances, add kerosene to winter fuel in accordance with specifications of the vehicle manufacturer.

**B17**

Take out, replace, and drain fuel filter  
Peugeot 505D, 505/604 Turbo Diesel





#### 14.1.1 Taking out and replacing filter box (XD3(T)- 2.5 l engine)

Release the fastening screws (arrows) of the filter cover.

Unscrew and empty the filter box.

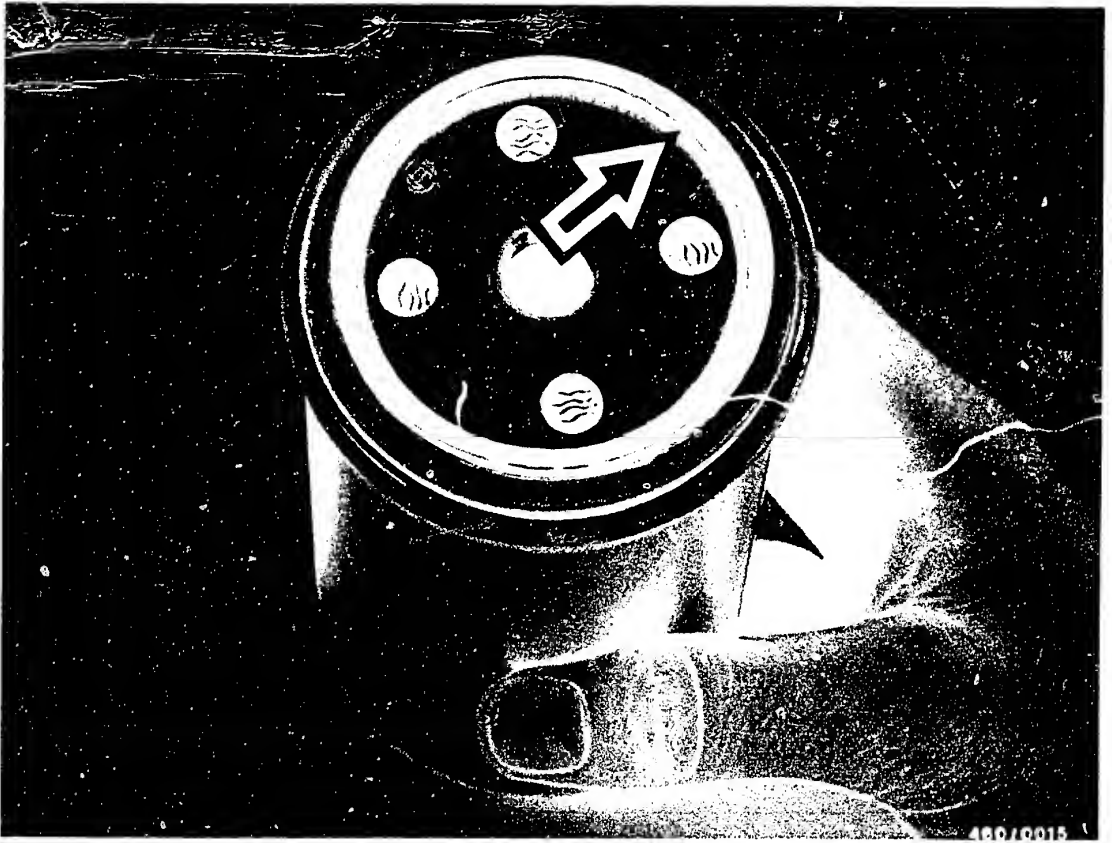
If the filter box sticks, use a special wrench, e.g. Matra W 167, to release it.

**B 18**

Take out, replace, and drain fuel filter  
Peugeot 505D, 505/604 Turbo Diesel







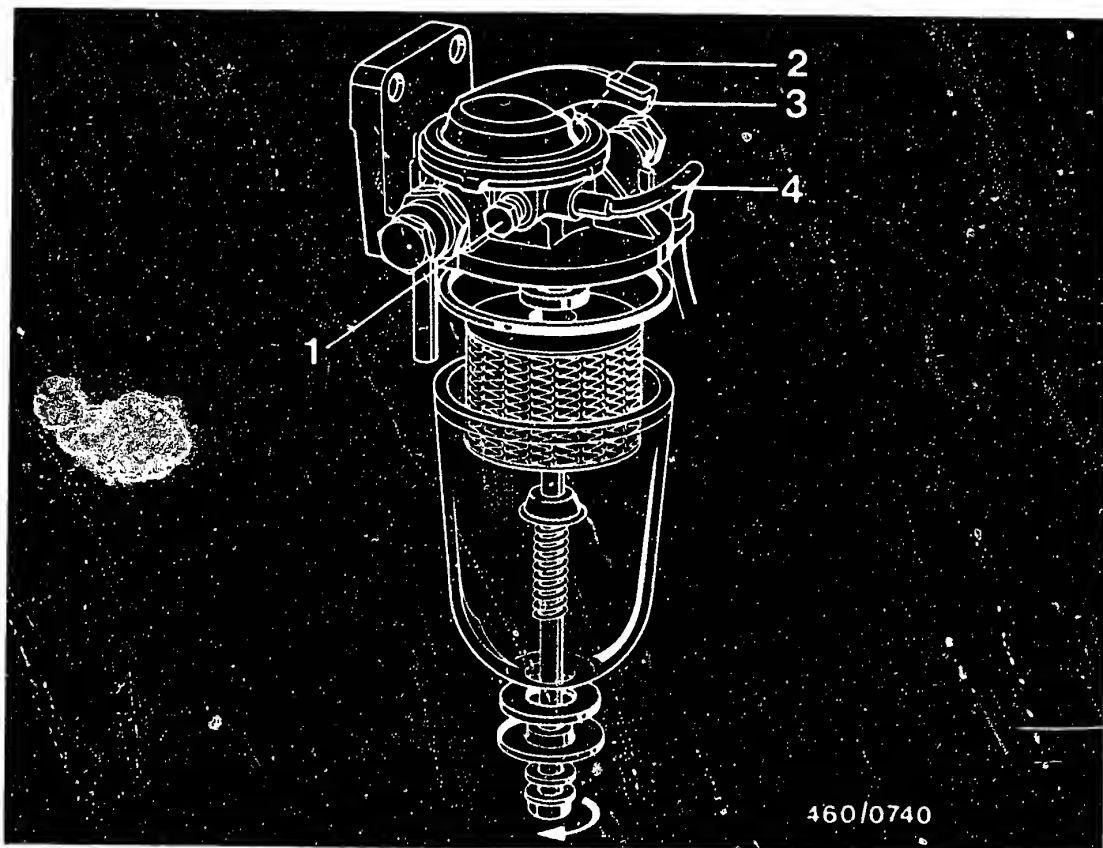
Rub diesel fuel into the rubber seal (arrow) of the new filter box.

Screw the filter box into the cover by hand and tighten it.

Check the fuel filter for leaks.

Under some circumstances, add kerosene to winter fuel in accordance with the specifications of the vehicle manufacturer.





#### 14.2 Draining the fuel filter (XD 2 S - 2.3 l engine)

Release the water drain screw (1).

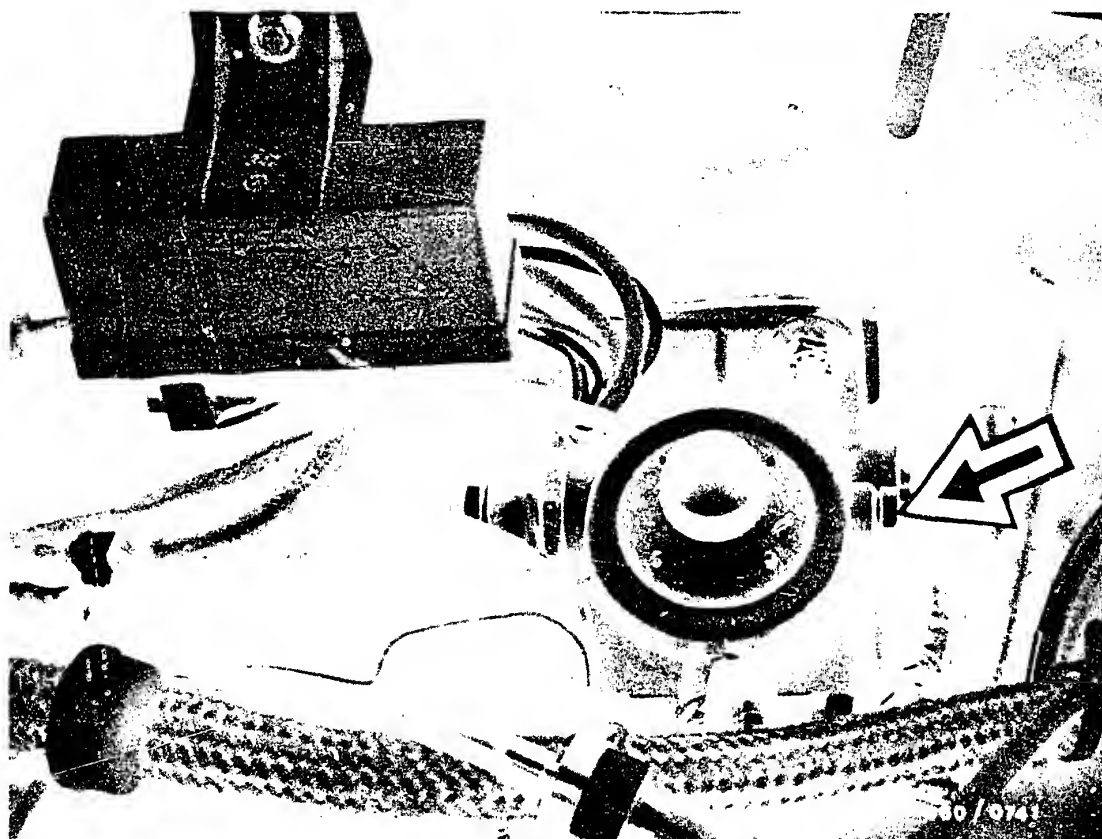
Operate the handpump (3) until the water has been pumped out completely into an appropriate catch basin via the pipe (4).

Tighten the water drain screw (1).

Release the bleeder screw (2) and operate the handpump until the fuel coming out at the bleeder screw is free of bubbles.

Tighten the bleeder screw (2).

Operate the handpump (3) again until resistance can be felt.



#### 14.2.1 Draining the fuel filter (XD3(T)-2.5 l engine)

Unscrew the bleeder screw (arrow) on the filter cover by a few turns.

Release the water drain screw at the base of the filter and drain out the water.

Catch the liquid in a catch basin.

Tighten the water drain screw and the bleeder screw and check for leaks.

If need be, bleed the fuel filter.

**B21**

Take out, replace, and drain fuel filter  
Peugeot 505D, 505/604 Turbo Diesel





### 15. Checking fuel-injection system for leaks

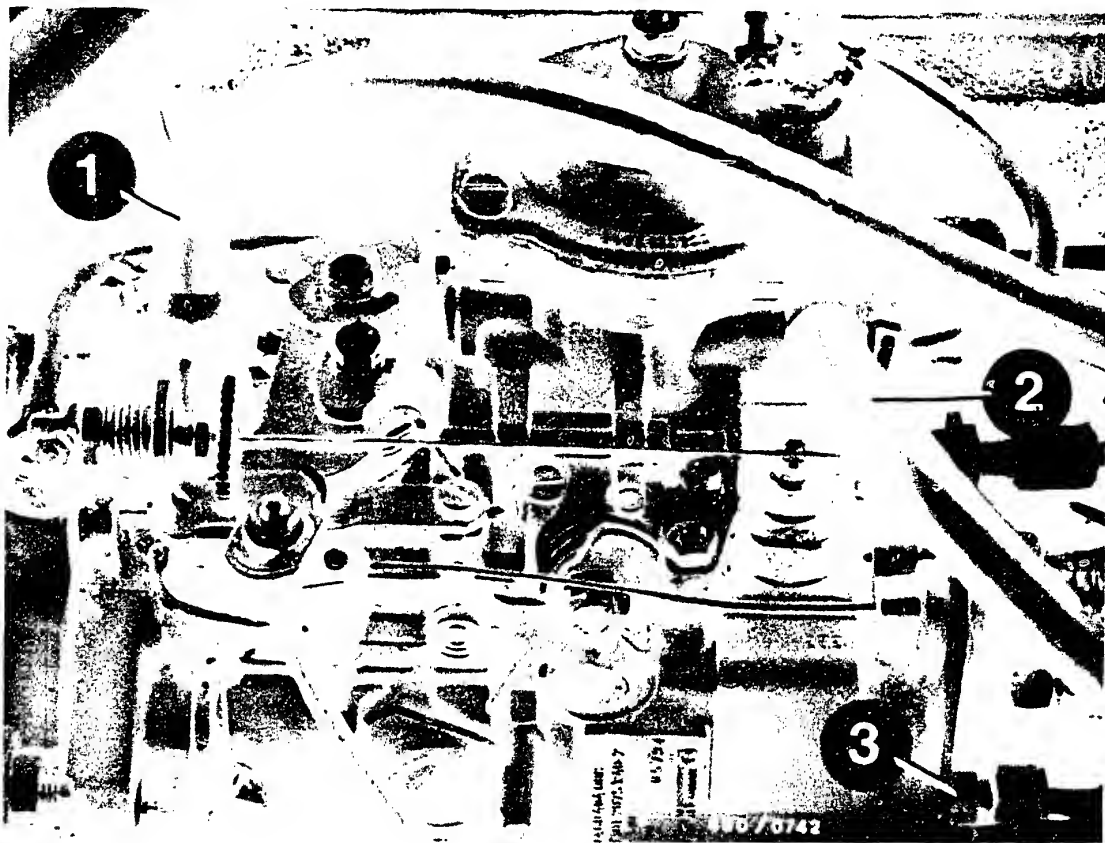
Check for leaks with the engine at normal operating temperature.

When checking for leaks, examine all connections on the fuel lines.

Watch especially:

- Connections to the fuel-injection nozzle holder assemblies (Figure, a)
- Connections at the fuel filter (Figure, b)

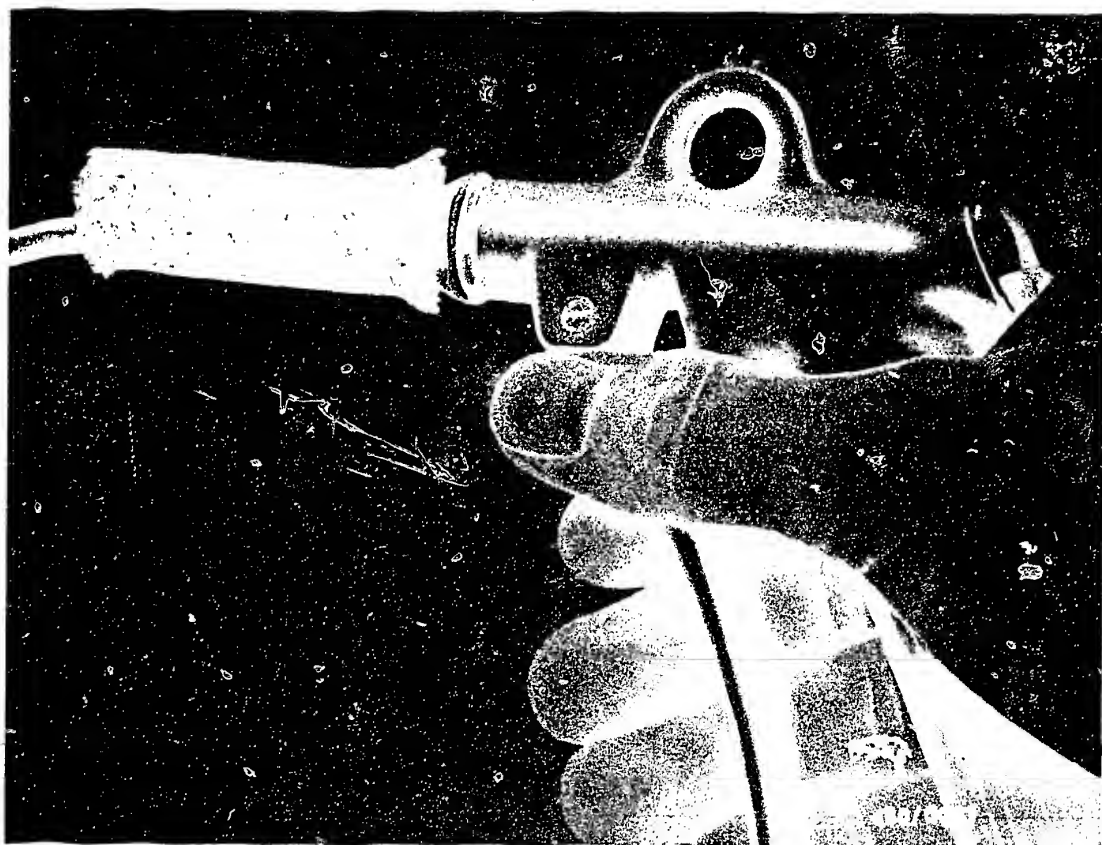




- Intake line (1) and return line (2) at the distributor-type fuel-injection pump.
- Delivery valve holders on the hydraulic head (3).

Check the fuel lines for hairline cracks.





### 16. Checking fuel lines

Make visual inspection of fuel lines where a problem is suspected.

If no pinching or kinking can be seen, take the fuel line in question out.

Using compressed air, check the fuel line for open passage. If need be, clean it.

A suitable piece of hose can be used as a seal at the sides when blowing through the fuel lines.



## 17. Exhaust test - checking air filter

### 17.1 Exhaust test

Summary of the content of the legal regulations  
(status as of April, 1978):

Motor vehicles with min. 4 wheels and a max. allowable speed greater than 25 km/h that are to be newly licensed are subject to these regulations. No checking of the exhaust is provided in the main tests.

Parts that can affect environmental pollution must be designed so that during operation, despite vehicle vibrations, the legal regulations are met.

That is particularly true of cold-start equipment and full-load stops.

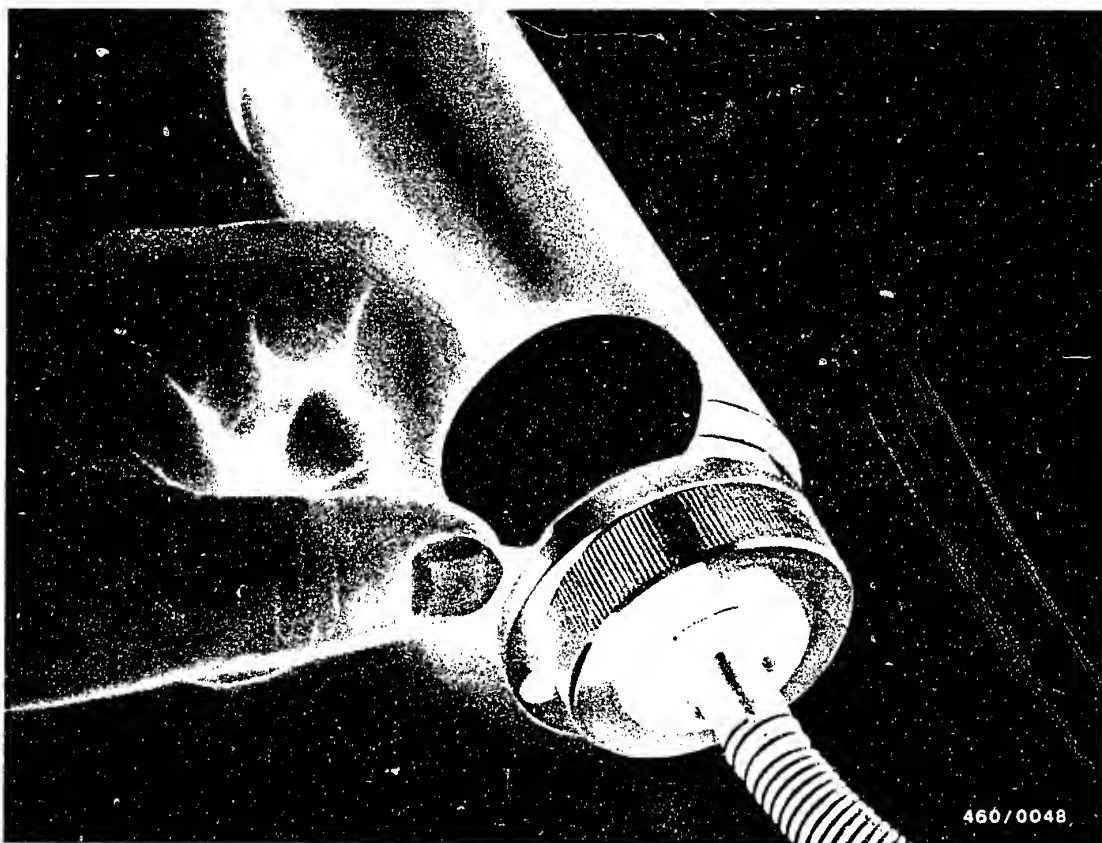
In principle, approval is granted only by the Rheinland-Westfälische TÜV (Rhineland Westfalian Technical Inspection Agency) in Essen.

**C1**

Exhaust test

Peugeot 505D, 505/604 Turbo Diesel





### 17.1.1 Test set-up

The exhaust test is run using the Bosch exhaust tester.

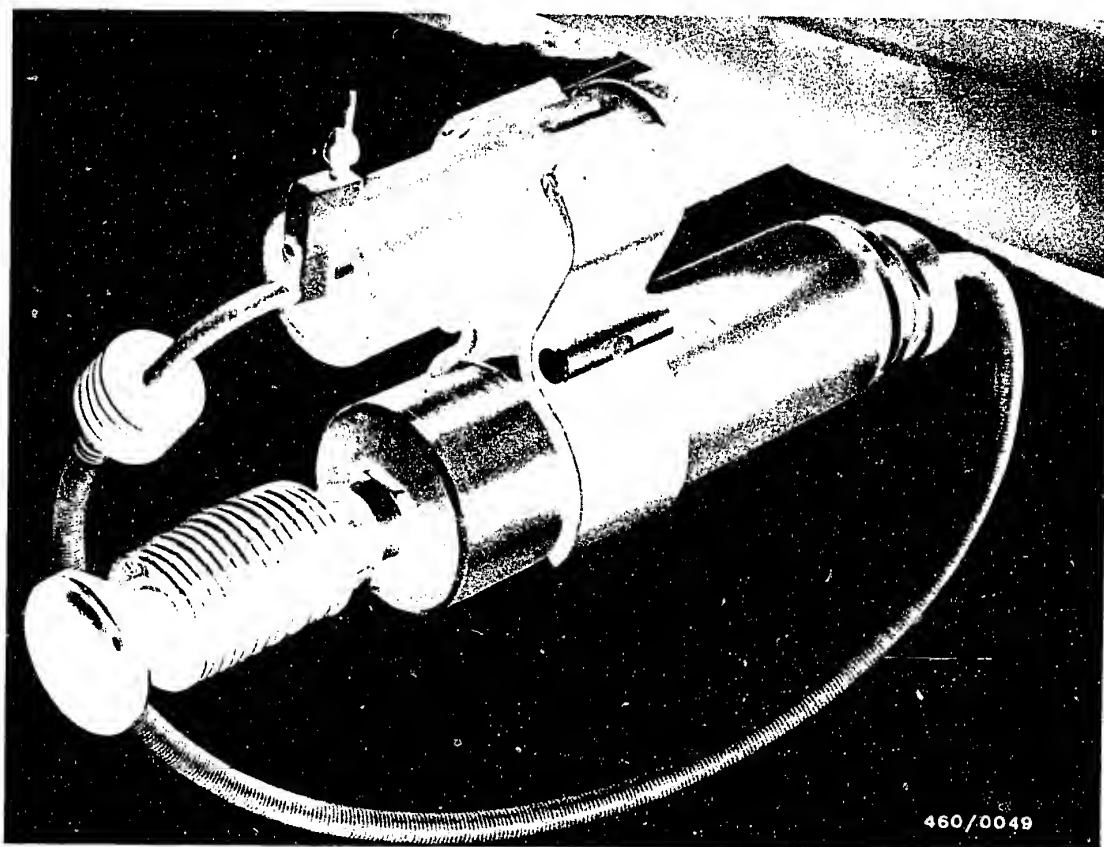
The exhaust tester consists of the following instruments:

- Accessory box with metering pump 0 681 169 038
- Evaluation unit 0 684 102 050

Insert the filter disc into the metering pump.







Fasten the metering device to the exhaust pipe using an appropriate bracket.

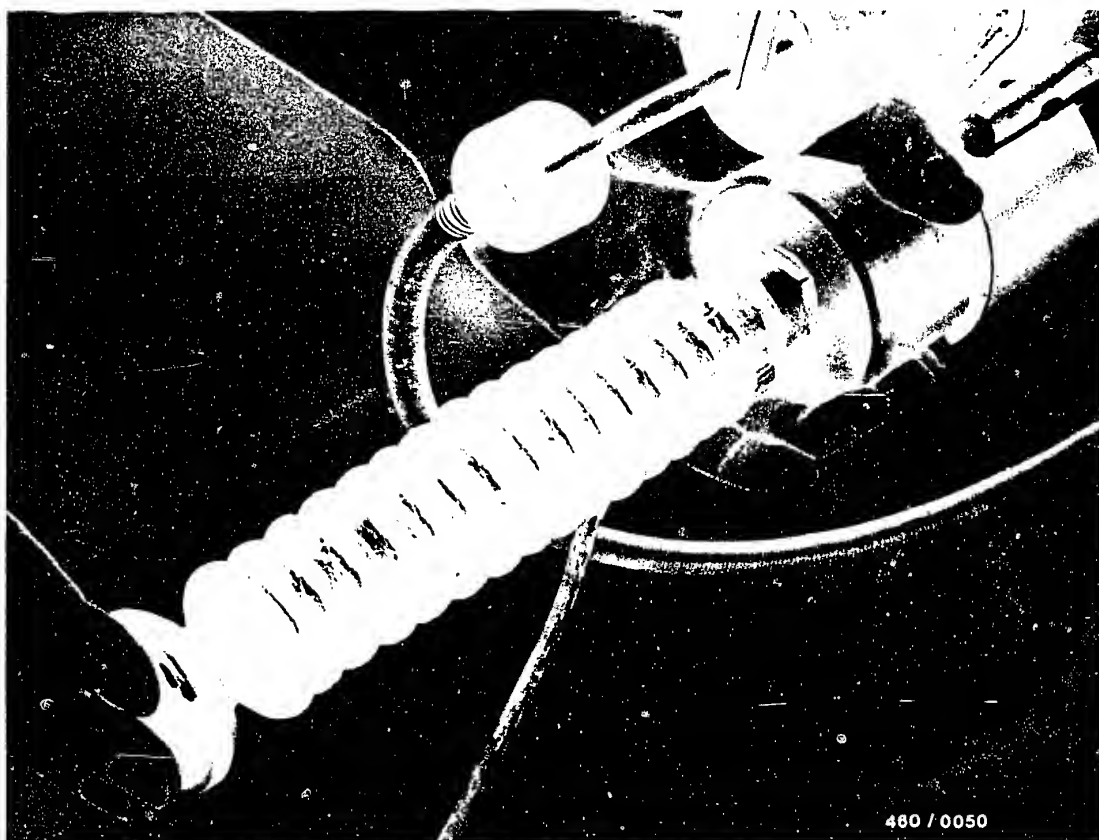
Insert sampling probe as deep as possible into the exhaust pipe and clamp it fast.

**C3**

Exhaust test

Peugeot 505D, 505/604 Turbo Diesel





### 17.1.2 Test procedure

Cock the metering pump by shoving the black pressure knob in.

Take the rubber ball on the triggering hose along into the passenger compartment.

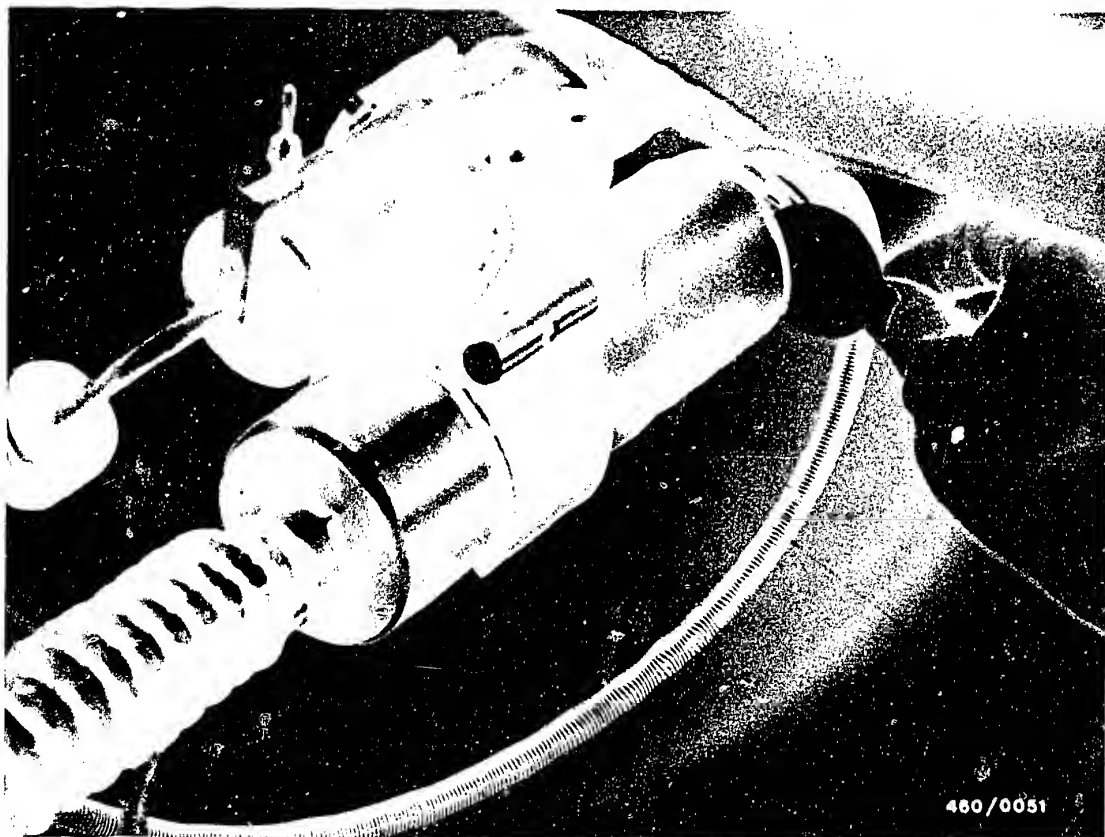
The test can be run on the "roller" (chassis dynamometer) or on the road (incline).

In every case, prefer testing on the chassis dynamometer.

Select the gear in which a velocity of approx. 40 km/h is attained with the accelerator pedal in the full-load position.

Load the engine enough so that a velocity of approx. 25 km/h is attained with the same accelerator pedal setting.





Hold this load for 5 seconds, and then trigger the metering device by pressing on the rubber ball.

Shut off the motor.

N O T E :

In the next step, remember that the exhaust pipe was heated by the running engine.

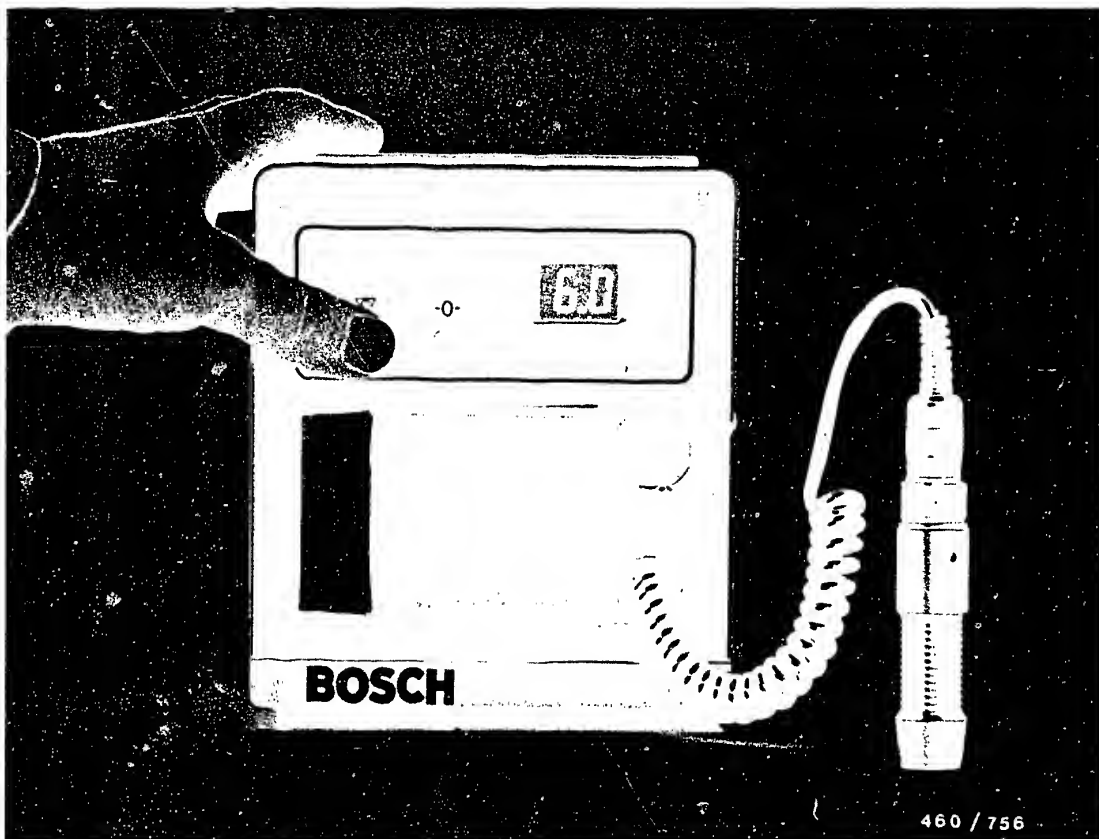
Remove the filter disc from the metering device.

**C5**

Exhaust test

Peugeot 505D, 505/604 Turbo Diesel





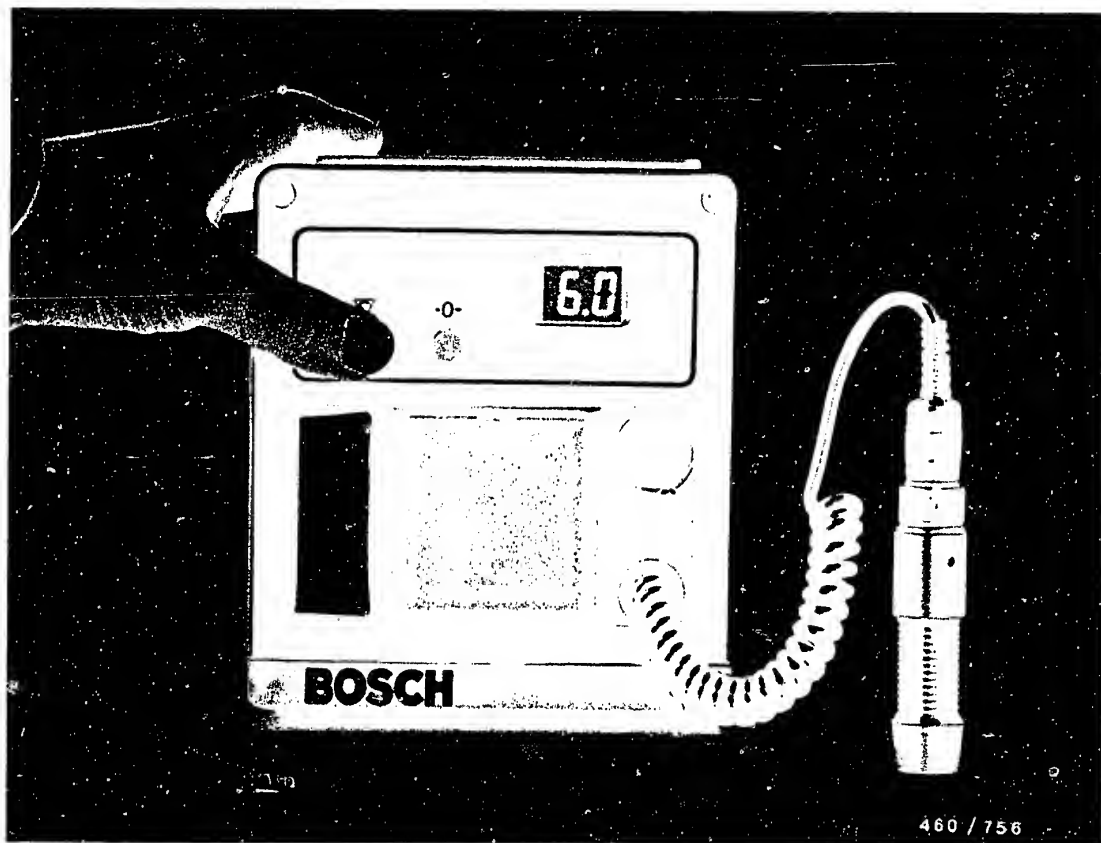
### Adjusting the zero point

The zero point adjustment must be made

- before every series of tests
- when there are changes in ambient conditions
- after each cleaning of the lens of the photovoltaic cell adapter.

Press the measuring head on the photovoltaic cell adapter firmly on 5 clean, white filter discs laid one on top of the other.

Press button "0" until the display 0.0 appears.  
Release button "0".



### Measurement

Take the filter disc from the metering device and lay it with the soot side up on 3 new filter discs laid one on top of the other.

Press the measuring head vertically against the black surface of the filter disc. At the same time, press button "C" until the smoke number measured appears in the display.

### Note:

Both in the zero point adjustment and in the measurement, the measuring head must be put down firmly. (Even a slight tilting can cause errors in measurement.) Compare the smoke number found with the evaluation sheet. In so doing, watch the kW (BHP) data from the vehicle manufacturer.



## 17.2 Checking the air filter

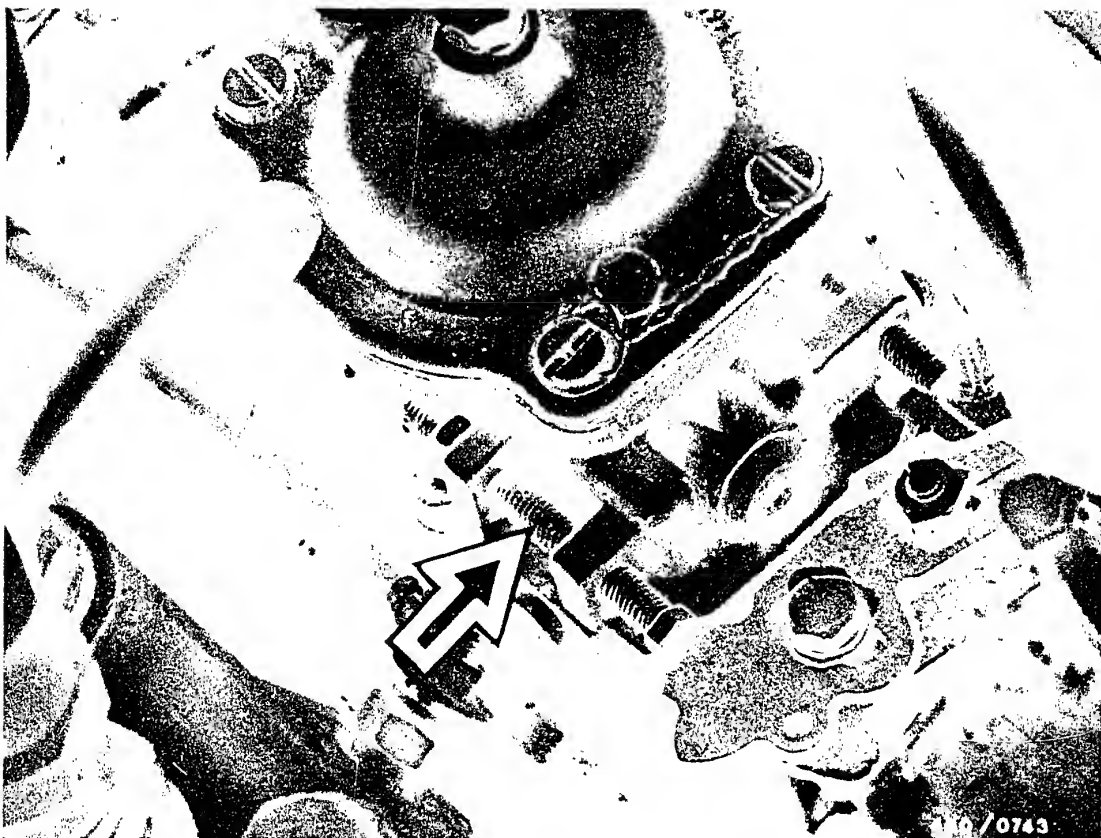
Take out the air filter and subject it to a visual inspection.

### Test criteria for the air filter:

- dust-covered air filter  
(check by pounding the air filter)
- oil-covered air filter
- solid particles in the air filter, e.g. foliage

If there is doubt, use a new filter element.





### 18. Adjusting idle speed

Connect a tachometer (e.g., photoelectric) to the engine.

#### Caution!

The engine must be at normal operating temperature to adjust the idle speed. Cooling water temperature + 80°C.

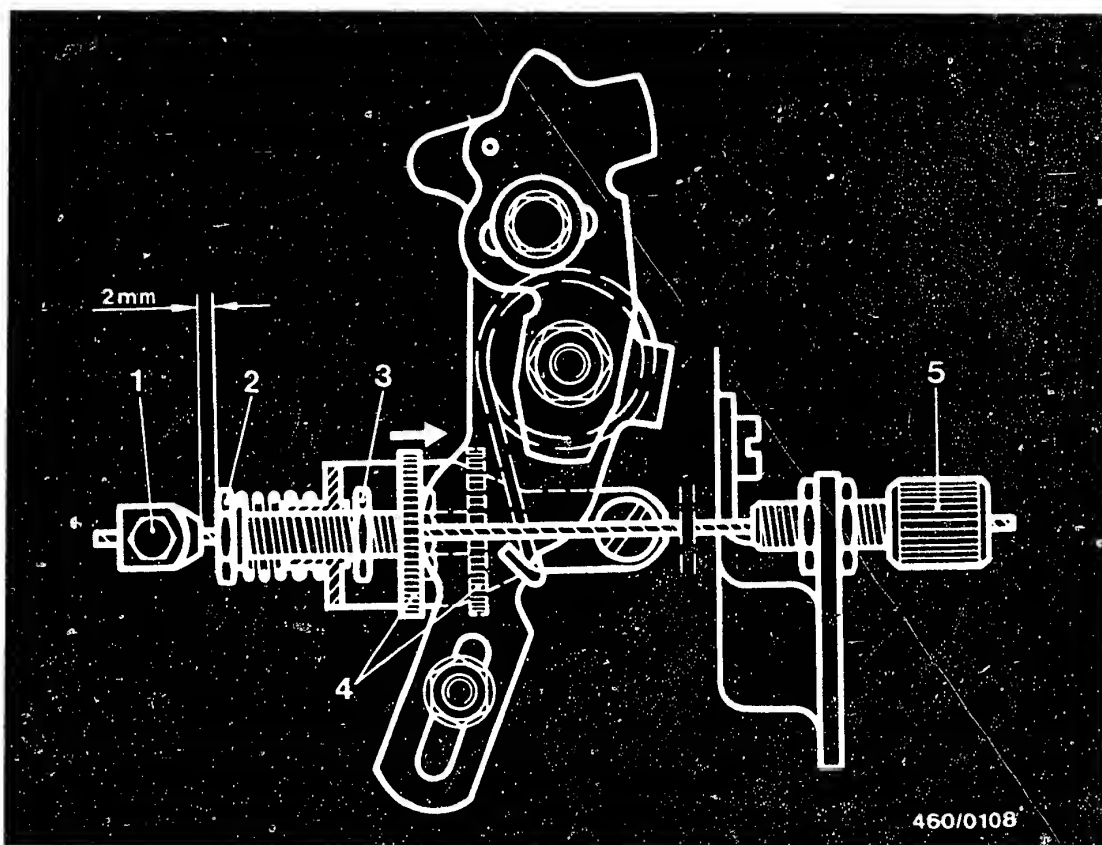
Adjust the engine speed at the idle speed adjusting screw (arrow):

505D	800 ... 850 min <sup>-1</sup>
505/604 D-Turbo	850 ... 900 min <sup>-1</sup>

Note that the engine camshaft and the fuel-injection pump are driven at half the engine speed.

After adjustment, lock the adjusting screw in place and seal it.





### 18.1 Adjusting idle increase (XD 2 S)

When the idle increase is switched off, there must be a 2 mm gap between the clamping piece (1) and the hex nut (2).

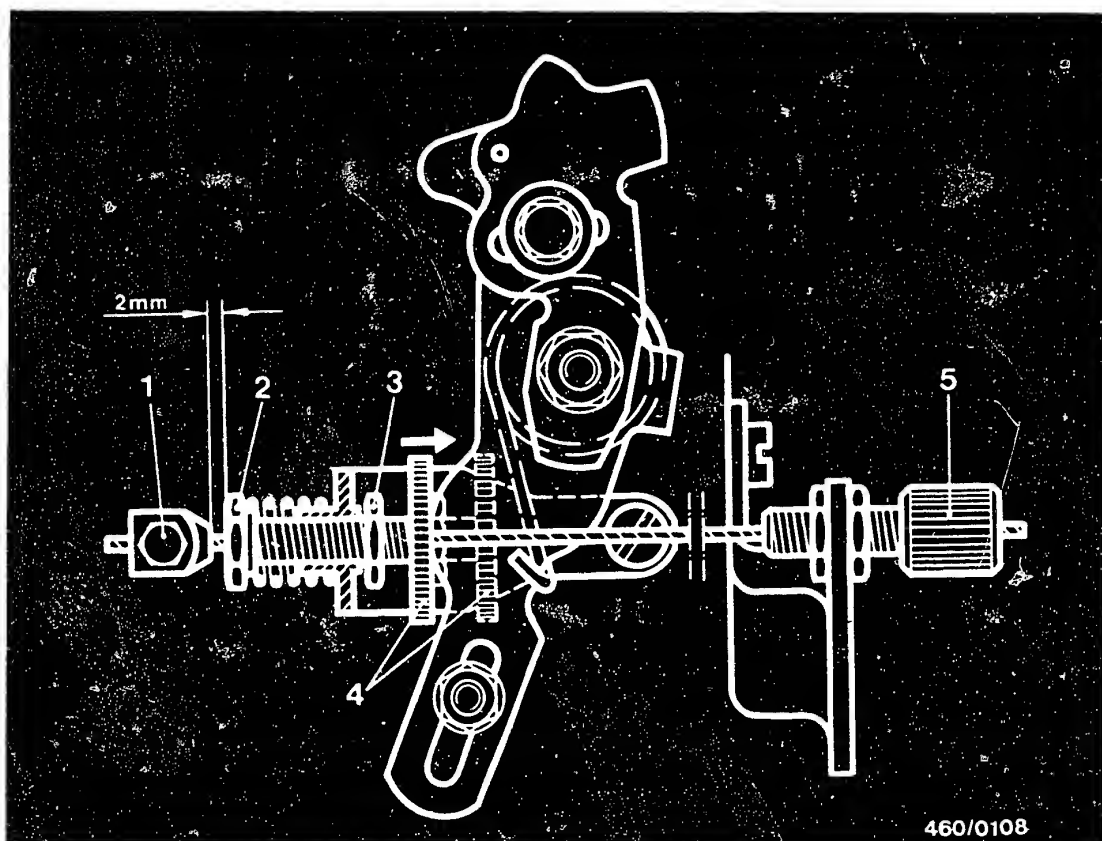
Make corrections at the clamping piece (1).

Start the engine and warm it up until the cooling fan starts.

Activate the idle increase.

The engine speed must be 1250 ... 1300 min<sup>-1</sup>.





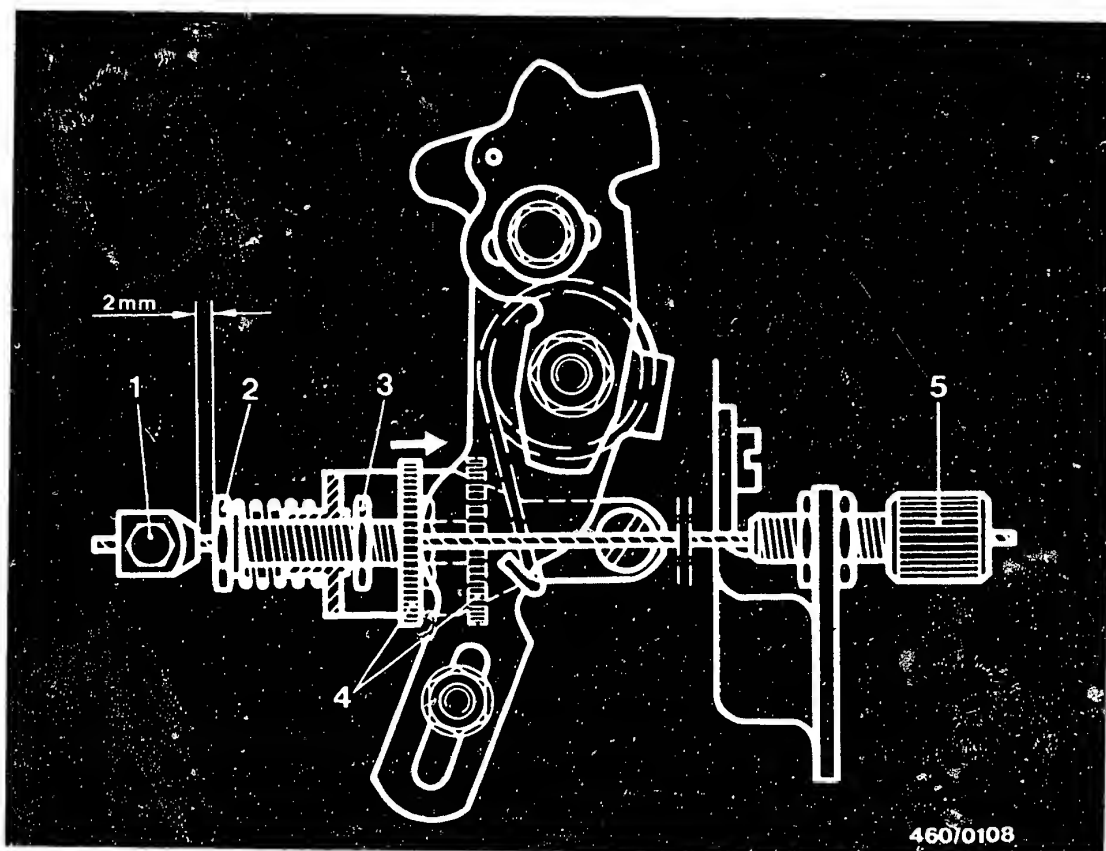
If correction is required, release the locking nut (3).

Hold the hex nut (2) with a wrench, and adjust the knurled screw (4) until the correct engine speed ( $1250...1300 \text{ min}^{-1}$ ) is attained.

Tighten the locking nut (3). To do so, hold the knurled screw (4) with a wrench.

Switch off the idle increase.

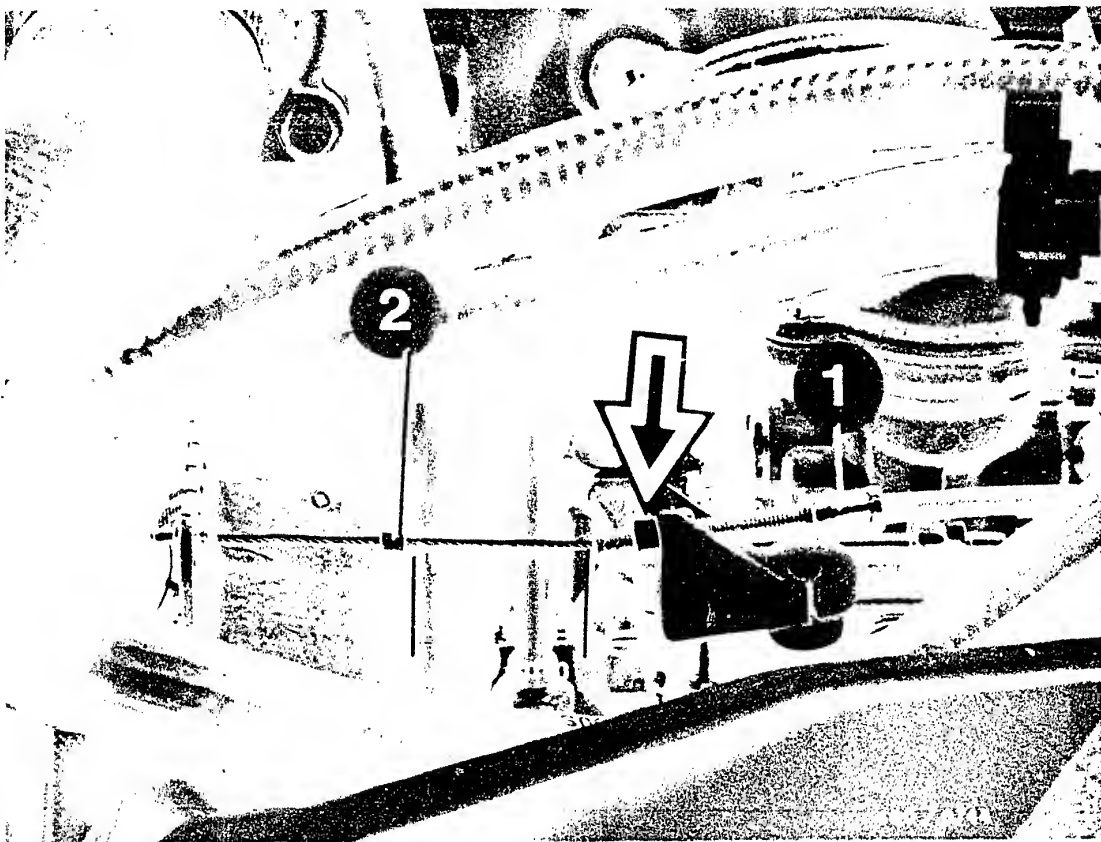
Release the locking nut for the knurled screw (5). Move the knurled screw (5) against the cable sleeve and tighten the locking nut.



Check the 2 mm gap between the clamping screw (1) and the hex nut (2).

If need be, correct the gap using the clamping piece (1).





### 19. Kick-down adjustment (XD 3 (T) - 2.5 l engine)

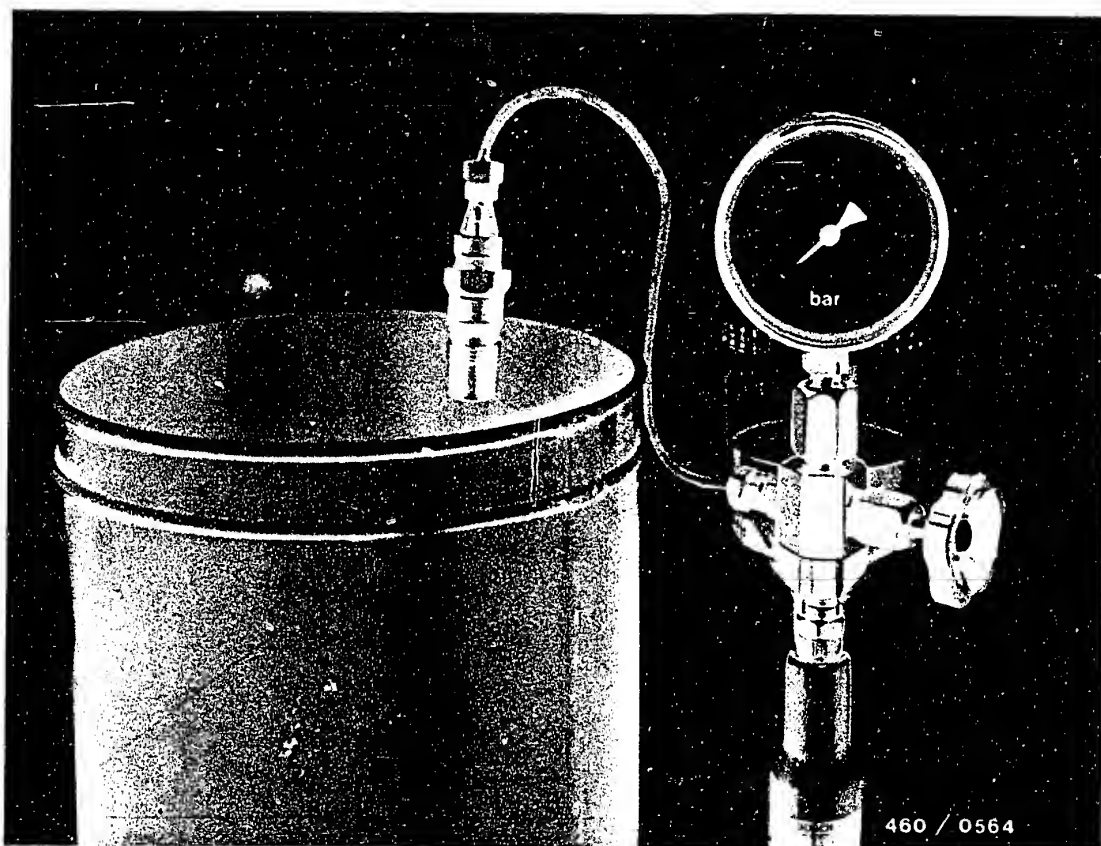
#### Prerequisite:

- Engine at normal operating temperature, temperature of cooling water + 80°C.

#### Adjustment:

- Press the accelerator pedal down to the kick-down point.
- Release the locking nuts (arrow) and adjust the guide sleeve (1) to a distance of 39 mm from the cable clamp (2).
- Tighten the locking nuts, check the setting.





## 20. Checking fuel-injection nozzles

Take the fuel-injection nozzles out.

Nozzle tester EFEP 60 H, 0 681 200 502, is used for the test.

Mount the fuel-injection nozzle and the nozzle-holder assembly on the nozzle tester.

To be certain that the nozzle is not clamped too tightly, move the manual lever on the nozzle tester strongly several times with the pressure gauge switched off (approx. 4 to 6 downward movements second).



### Instructions:

When checking fuel-injection nozzles, make certain that the fuel jet does not strike your hands, because, due to the high pressure, the fuel penetrates into the skin and can cause blood poisoning.

For testing, use pure calibrating oil per ISO 4113 or clean diesel fuel.

### Test criteria:

- Opening pressure
- Leaks
- Chatter
- Spray pattern

#### 20.1 Checking opening pressure

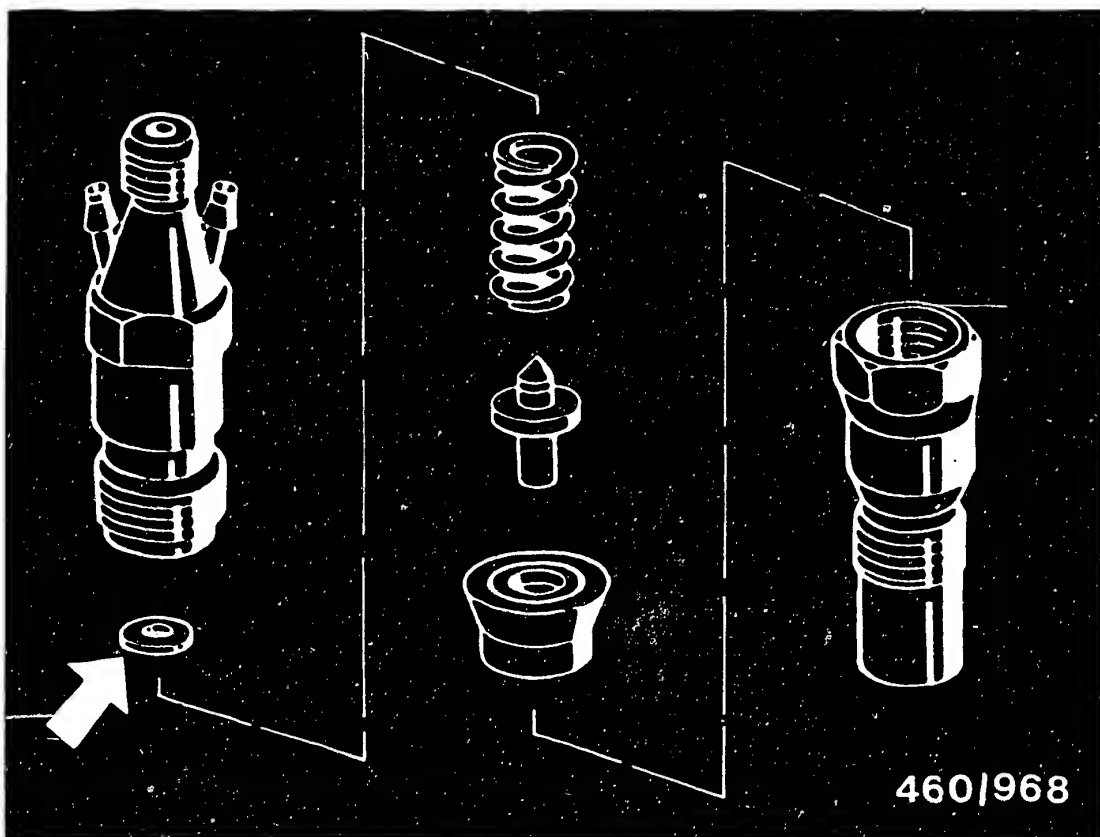
Open the spray valve on the pressure gauge by approx. 1/4 turn.

Slowly press down the manual lever on the nozzle tester (increased pressure on the pressure gauge).

Observe the pressure at which the needle of the pressure gauge stops (nozzle does not chatter), or where the pressure drops off suddenly (nozzle chatters).

The maximum pressure attained in so doing is the opening pressure.





If there is a deviation from the specified value, correct the nozzle opening pressure by means of compensating washers behind the pressure spring (arrow).

Specified value: 505D	<u>120 + 5 bar</u>
-----------------------	--------------------

504/604 D-Turbo	<u>130 + 5 bar</u>
-----------------	--------------------

thicker washers = higher nozzle opening pressure  
 thinner washers = lower nozzle opening pressure

Changing the spring travel by +/- 0.05 mm changes the nozzle opening pressure by approx. 5.0 bar.

## 20.2 Checking for leaks

Open the shutoff valve on the pressure gauge by approx. 1/4 turn.

Dry off the lower portion of the nozzle and nozzle-holder assembly. (Blow it dry with air.)

Slowly press down on the hand lever until the pressure gauge indicates 20 bar less than the opening pressure as read above. The nozzle does not leak if there is no drop dripping from the nozzle opening within 10 seconds.

If a drop drips off, take the nozzle-holder assembly combination apart and clean it.

If the leak is still there, take out and replace the nozzle.

It is not permissible to remachine the parts of the nozzle.

### Note:

Striation on the holder assembly and the intermediate disc can be machined off provided the necessary care is taken (other than during the warranty period).



### 20.3 Chatter test, Evaluation of the spray pattern

#### General information:

When evaluating nozzles, make a distinction between new and used nozzles.

Switch the pressure gauge off.

#### New nozzles:

The chatter test makes it possible to test for ease of movement for the nozzle needle in the nozzle body by means of listening. If the nozzle does not chatter in spite of cleaning, it is to be replaced with a new nozzle. In the chatter test, the shape of the spray is of no significance. A spray pattern corresponding to specifications is generally present only with new nozzles.

#### Used nozzles:

The chatter behavior of the nozzle deteriorates due to wear in the area of the seat. When the lever is moved quickly, the nozzle must chatter audibly and/or spray a well-atomized spray.

In the case of used nozzles, the spray pattern can deviate from the ideal shape from a new nozzle. The spray pattern from such nozzles however can be perceptibly improved by appropriate cleaning.





## 20.4 Chatter test and spray test

These are pintle nozzles, with a throttle effect, that are installed in all types of engines.

These nozzles have a special base shape and an additional spray hole through which the preliminary spray comes out.

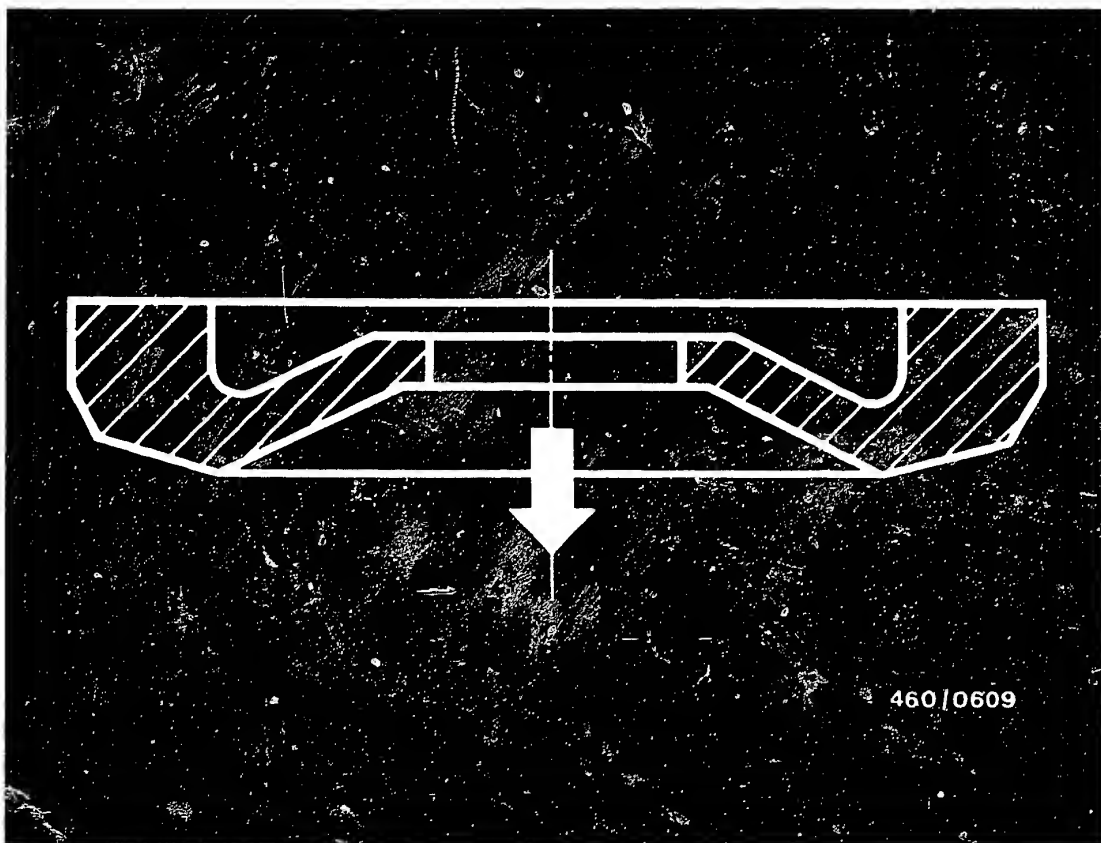
### Chatter test:

Due to its special construction, this nozzle chatters very softly. A chatter test is possible on it only when the hand lever is being moved between 1 and 2 downward movements per second. When testing speed is increased, the chattering stops. The calibrating oil then comes out of the nozzle with a hissing sound. Only when the hand lever is moved suddenly and quickly (approx. 4...6 downward movements per second) does the nozzle chatter with a high whistling tone.

Spray pattern: (valid for new nozzles only)

When tested at a low speed, the majority of the fuel delivered must come out through the preliminary spray hole at the side well-atomized and without the formation of heavier strands. Evaluation of the main jet is possible only when the hand lever is moved quickly (approx. 4...6 downward movements per second). The spray must be closed and well atomized.





### 20.5 Putting in fuel-injection nozzles

Before putting the fuel-injection nozzles in, insert a new thermal protection disc right side up into the cylinder head for shielding and compensation of tolerances (seal cone  $150^\circ$  in the direction shown by the arrow).

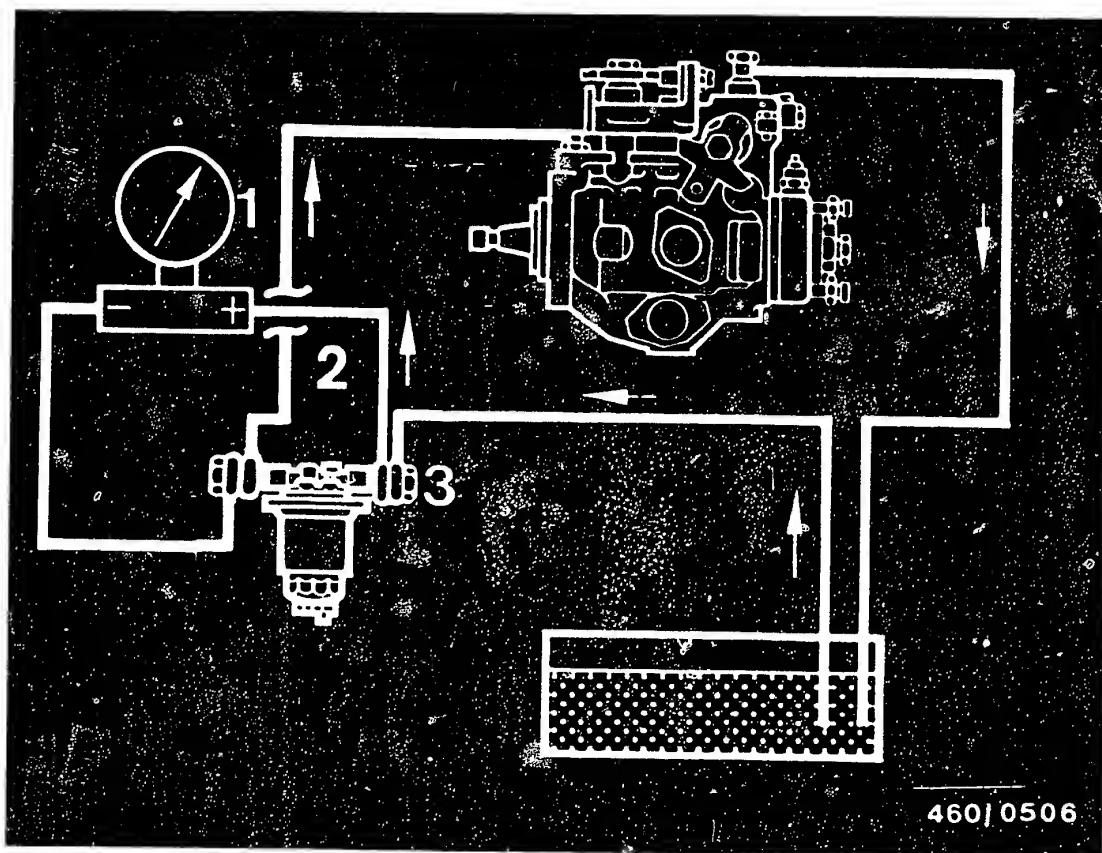
Then screw the nozzle holder into the cylinder head and tighten to 70 Nm.

#### Note:

If the tightening torque is exceeded, the nozzle needle can jam.

Tighten union nuts for the fuel-delivery lines to 25 Nm.



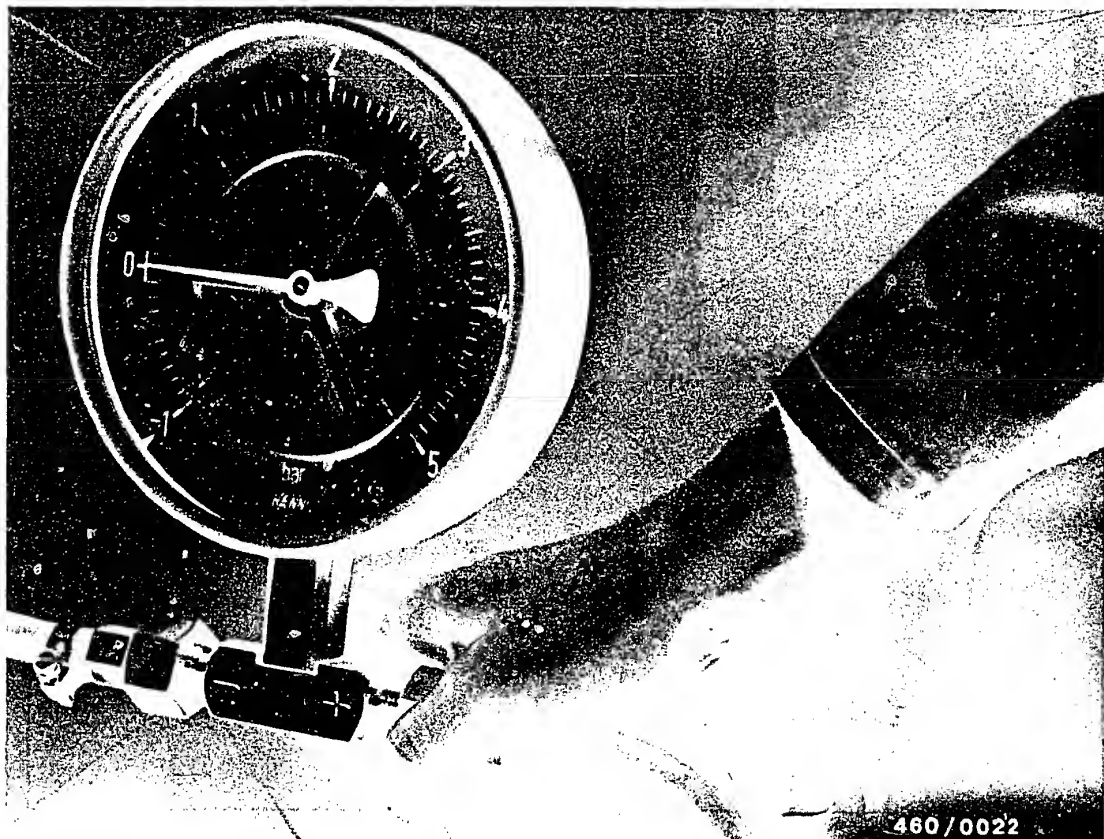


- 1 = Differential pressure gauge
- 2 = Filter outlet  
(Use inlet union and overlong inlet-union screw  
2 443 456 020.)
- 3 = Filter inlet  
(Use inlet union and overlong inlet-union screw  
2 443 456 020.)

### 21. Connection diagram for filter test (differential pressure test)

Connect the differential pressure gauge to the fuel filter using appropriate connectors.





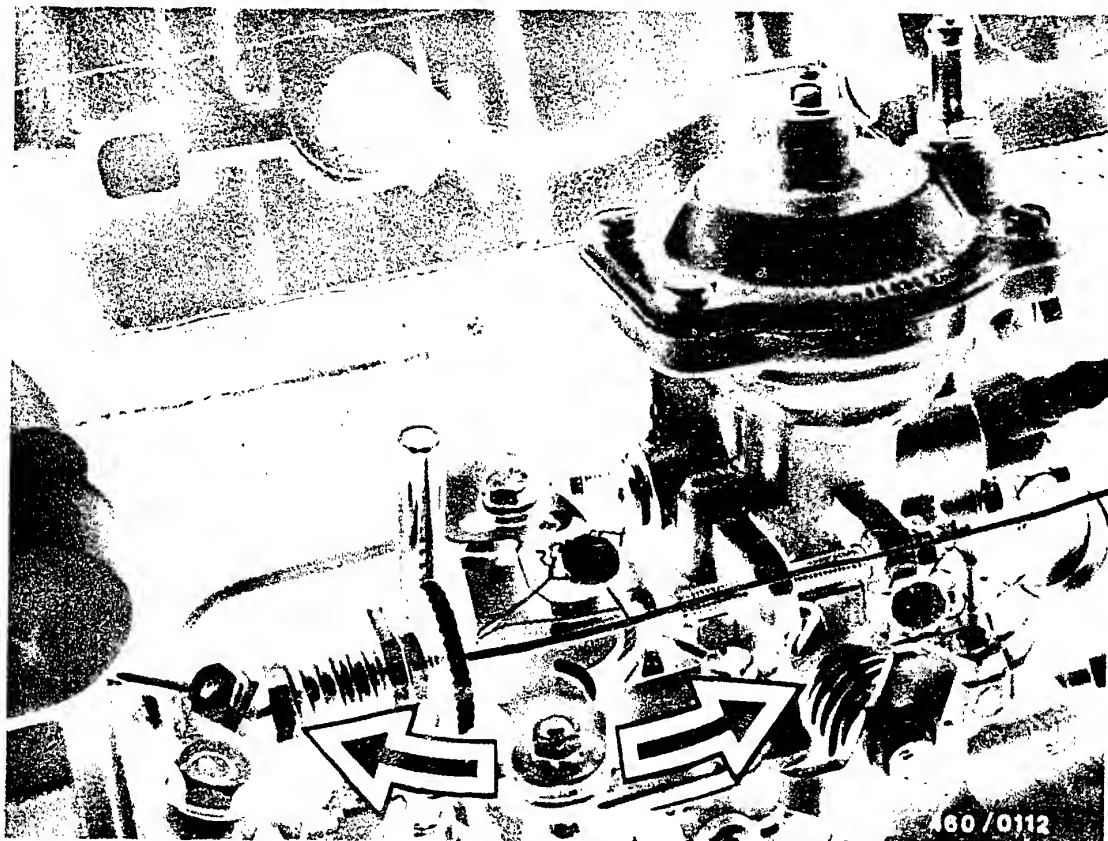
Connect the differential pressure gauge with the side identified with (+) to the fuel filter inlet.

Mount the (-) connection of the pressure gauge on the filter outlet.

Watch the connection diagram.

Run the engine until it is assured that there is no air in the fuel system.





Move the fuel-injection pump control lever (approx. 1 second) from the idle stop to the max. speed stop.

Release the control lever and read the differential pressure on the pressure gauge.

The differential pressure must not exceed max. 0.3 bar. If that value is exceeded, take out and replace the filter.

Remove test connections.

If need be, bleed the fuel system.



## 22. Checking the preheating system

### 22.1 Tester required

VA-Tester                      e.g., ETT 011.00                      0 684 101 100

### 22.2 Workshop instructions

22.2.1 We recommend replacing the R sheathed-element glow plugs every 45000 km.

Note:

Incorrect setting of the start of fuel delivery can shorten considerably the service life of the sheathed-element glow plugs.

22.2.2 On each repeated start, in order to attain a new preheating, first bring the glow-plug and starting switch into the setting St and then into the setting M.  
That reactivates the safety shutoff built into the glow duration unit.

22.2.3 If there is a voltage greater than 16 V present at Term. 3 of the glow duration unit (e.g., during quick-charging), the glow duration unit does not switch on. If the increased voltage occurs during the preheating, the glow duration unit switches off immediately. (Overvoltage protection for the R sheathed-element glow plugs).



22.2.4 In case of short-circuit (short-circuit current from approx. 240 A) in power circuit Term. 1 and at Term. 5 of the glow duration unit, including the R sheathed-element glow plug, the glow duration unit switches off.

### 22.3 Preheating time

How long the preheating system is switched on depends upon the ambient temperature.

#### Note:

In order to avoid destruction of the glow duration unit, the bulb installed in the starting indicator light must be 12 V, max. 2 Watt.

#### Prerequisites for testing:

Battery fully charged.

Compression O.K. If need be, check compression loss.

Fuel supply system and/or fuel-injection system O.K.



Starting motor turns, engine does not start or starts only with difficulty

yes

Check voltage supply to the R sheathed-element glow plugs

Connect a voltmeter to the R sheathed-element glow plug and ground. Bring the glow-plug starting switch into setting St and then into setting M.

For at least 11 sec. (2.5 l engine) or 20 sec. (2.3 l engine) (depending on temperature), there must be a minimum voltage of 10 V. The system switches off automatically after this time.

N.B.:

If the measurement should be repeated, first bring the glow-plug starting switch into setting St and then into setting M.

Is the minimum voltage present?

no

1. Voltage less than 10 V. Check the power circuit (battery +) and Term. 1 and Term. 5 of the glow duration unit for a voltage drop. Eliminate any voltage drop.
2. If there is no voltage present, then check the lead from the R sheathed-element glow plug to the glow duration unit Term. 5 for a break. Eliminate any break. If there is no break, then continue at Coordinates D5/6. Not necessary to continue here.

yes

Check the start indicator light

Bring the glow-plug starting switch into setting St and then into setting M. The start indicator light must come on.

The start indicator light must come on.

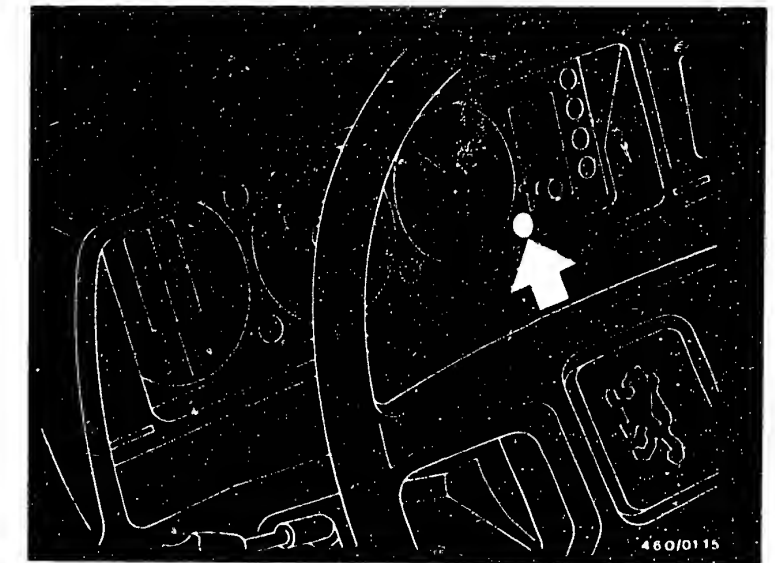
Does the start indicator light light?

no

1. Check the lead from the glow-plug starting switch Term. 15 to the glow duration unit Term. 3 for a break. Eliminate any break.
2. Check the lead from the glow duration unit Term. 6 including the start indicator light and its ground connection, for a break. Eliminate any break.
3. Check the ground lead Term. 2 from the glow duration unit for a break. Eliminate any break.

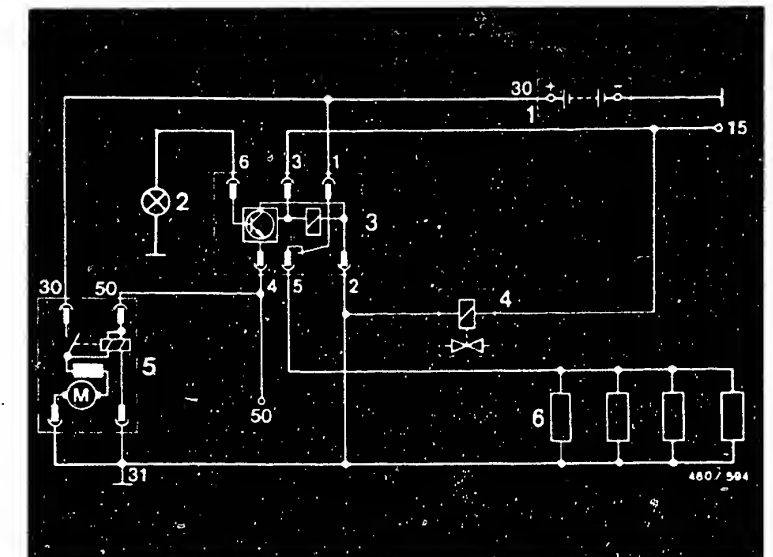
yes

Continue on D4/D5



Installation position, start indicator light (arrow)

- 1 = Battery
- 2 = Preheater indicator light (12 V, 2 W)
- 3 = Glow duration unit
- 4 = Solenoid-operated valve
- 5 = Starting motor
- 6 = Sheathed-element glow plugs



**D2**

Checking preheating system

Peugeot 505D, 505/604 Turbo Diesel



**D3**

Checking preheating system

Peugeot 505D, 505/604 Turbo Diesel





## Checking preheating system (continued)

yes

### Checking preheating duration

Bring the glow-plug and starting switch into setting St and then into setting M. The duration of preheating (start indicator light comes on) must be as follows at the ambient temperatures shown:

	2.5 l eng.	2.3 l eng.
0° C	- 7 ... 11	28 ... 48 sec.
+ 10° C	- 6 ... 10	21 ... 41 sec.
+ 20° C	- 4 ... 8	14 ... 34 sec.
+ 30° C	- 3 ... 6	7 ... 27 sec.
+ 40° C	- 1 ... 5	0 ... 20 sec.

Is the preheating duration (seconds) O.K.?

yes

### Checking the safety circuit

Connect a voltmeter to the R sheathed-element glow plug and ground. Bring the glow-plug starting switch into setting St and then into setting M. The voltmeter must show a voltage as indicated below for the ambient temperatures shown:

	2.5 l eng.	2.3 l eng.
0° C	for 16...20	43...81 sec.
+ 10° C	for 15...19	36...75 sec.
+ 20° C	for 14...18	29...69 sec.
+ 30° C	for 13...17	22...63 sec.
+ 40° C	for 12...16	15...57 sec.

After the prescribed time has passed, the voltmeter must read 0 V. Does the voltmeter return to 0 V after the prescribed time?

yes

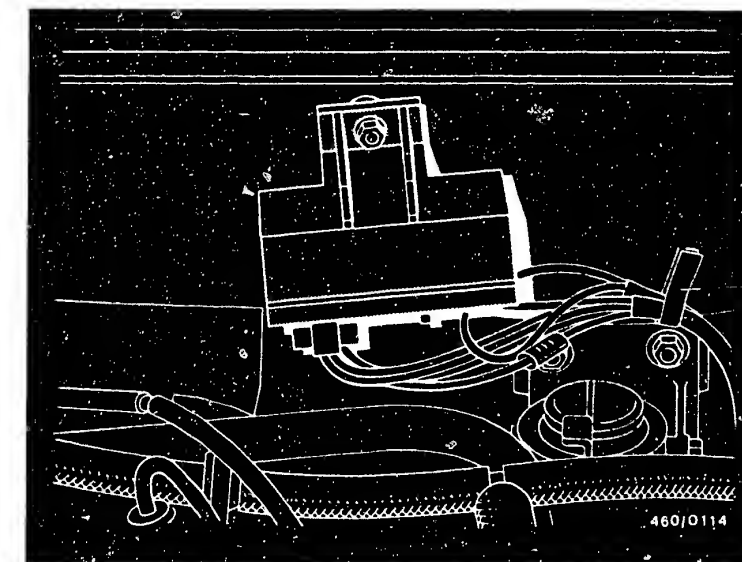
Continued on D6/D7

no

Take out and replace the glow duration unit.

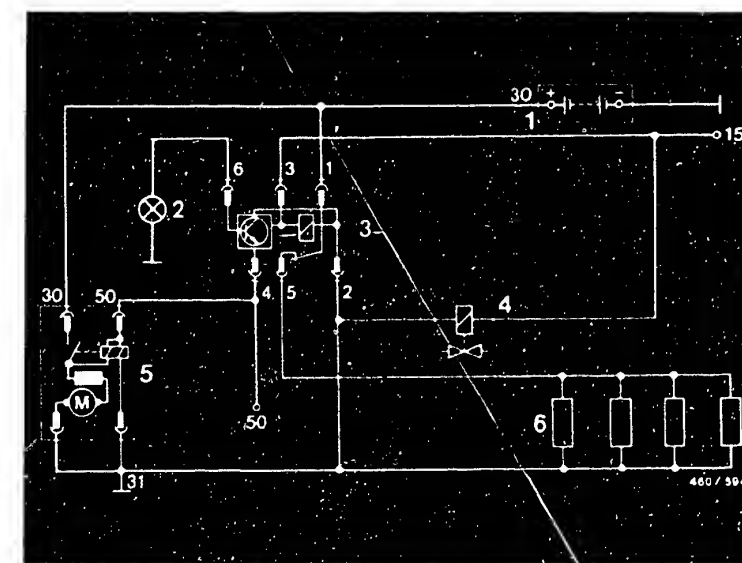
no

Take out and replace the glow duration unit.



Installation position, glow duration unit.

- 1 = Battery
- 2 = Preheater indicator light (12 V, 2 W)
- 3 = Glow duration unit
- 4 = Solenoid-operated valve
- 5 = Starting motor
- 6 = Sheathed-element glow plugs



**D4**

### Checking preheating duration

Peugeot 505D, 505/604 Turbo Diesel



**D5**

### Checking preheating duration

Peugeot 505D, 505/604 Turbo Diesel



## Checking the preheating system (continued)

yes

### Check preheating when starting motor is turned on

Connect a voltmeter to the R sheathed-element glow plug and ground. Bring the glow-plug starting switch into setting D. The voltmeter must indicate a voltage of 6 ... 10 V.

Is there voltage present?

no

1. Check the lead from the glow-plug and starting switch Term. 50 to the glow duration unit Term. 4 for a break. Eliminate any break.
2. If point 1 is O.K., then take out and replace the glow duration unit.

yes

### Checking the R sheathed-element glow plugs

Check the R sheathed-element glow plugs individually for continuity, using an ohmmeter.

Does the R sheathed-element glow plug have continuity?

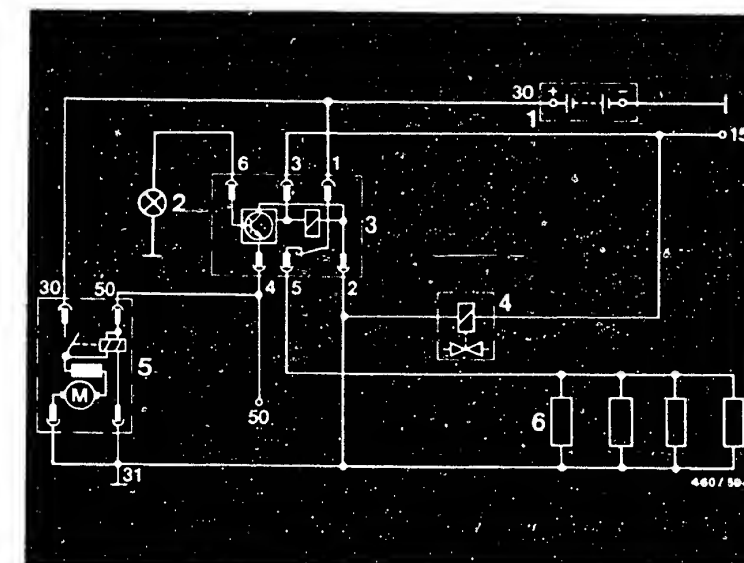
no

Take out and replace the R sheathed-element glow plug

yes

Preheating system O.K.

Testing starting from D 5 not necessary.



- 1 = Battery
- 2 = Preheater indicator light (12 V, 2 W)
- 3 = Glow duration unit
- 4 = Solenoid-operated valve
- 5 = Starting motor
- 6 = Sheathed-element glow plugs

**D6**

Checking preheating system  
Peugeot 505D, 505/604 Turbo Diesel



**D7**

Checking preheating system  
Peugeot 505D, 505/604 Turbo Diesel



## Checking preheating system (continued from C23/C24)

### Check voltage at the glow duration unit Term. 3.

Connect a voltmeter to the glow duration unit Term. 3 and ground. Bring the glow-plug and starting switch into setting St and then into setting M. Voltmeter must indicate battery voltage. Is there battery voltage present?

no

Check the lead from the glow duration unit Term. 3 to the glow-plug and starting switch for a break.

Eliminate any break.

yes

Check the ground lead Term. 2 from the glow duration unit. Connect a voltmeter to the glow duration unit Term. 2 and battery +. The voltmeter must indicate battery voltage. Is there battery voltage present?

no

Check the ground lead Term. 2 from the glow duration unit for a break.

Eliminate any break.

yes

### Check the voltage at the glow duration unit Term. 1.

Connect a voltmeter to the glow duration unit Term. 1 and ground. The voltmeter must indicate battery voltage. Is there battery voltage present?

no

Check the lead from the glow duration unit Term. 1 to battery + for a break.

Eliminate any break.

yes

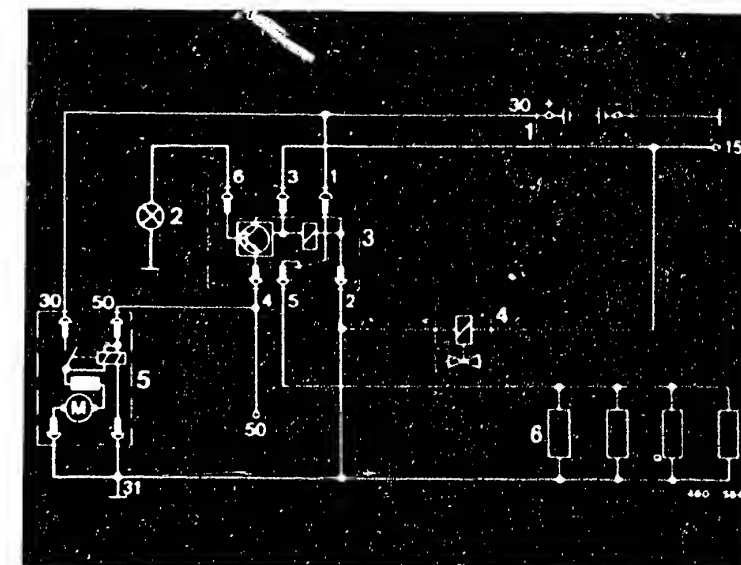
Is there voltage present now at the R sheathed-element glow plug?

no

Take out and replace the glow duration unit.

yes

Continued on D10/D11



- 1 = Battery
- 2 = Preheater indicator light (12 V, 2 W)
- 3 = Glow duration unit
- 4 = Solenoid-operated valve
- 5 = Starting motor
- 6 = Sheathed-element glow plugs

**D8**

Checking preheating system

Peugeot 505D, 505/604 Turbo Diesel



**D9**

Checking preheating system

Peugeot 505D, 505/604 Turbo Diesel



## Checking preheating system (continued)

yes

### Checking the start indicator light

Bring the glow-plug and starting switch into setting St and then into setting M. The start indicator light must come on. Does the start indicator light light?

no

1. Check the lead from the glow-plug and starting switch Term. 15 to the glow duration unit Term. 3 for a break. Eliminate any break.

2. Check the lead from the glow duration unit Term. 6, including the start indicator light and its ground connections, for a break. Eliminate any break.

3. Check the ground lead Term. 2 from the glow duration unit for a break. Eliminate any break.

yes

### Checking the preheating duration

Bring the glow-plug and starting switch into position St and then into position M. The duration of preheating (start indicator light comes on) must be as shown below at the ambient temperatures indicated :

	2.5 l eng.	2.3 l eng.
0° C	- 7 ... 11	28 ... 48 sec.
+ 10° C	- 6 ... 10	21 ... 41 sec.
+ 20° C	- 4 ... 8	14 ... 34 sec.
+ 30° C	- 3 ... 6	7 ... 27 sec.
+ 40° C	- 1 ... 5	0 ... 20 sec.

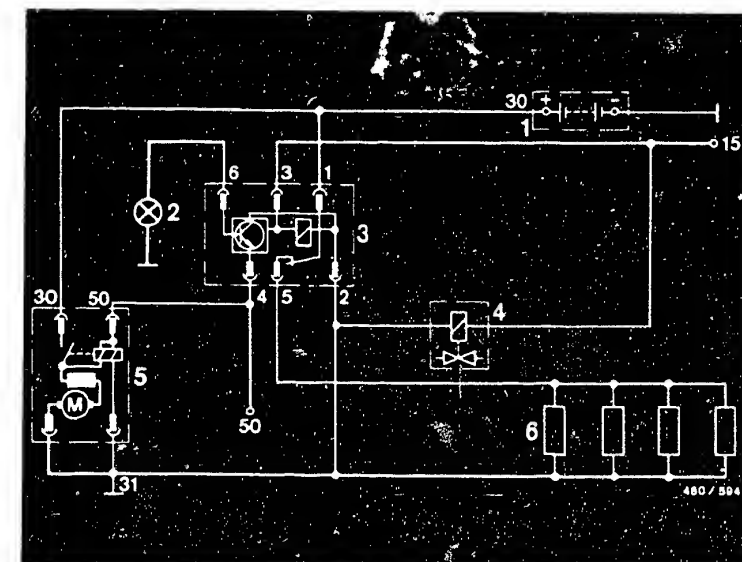
Is the preheating duration (seconds) O.K.?

no

Take out and replace the glow duration unit.

yes

Continued on D12/D13



- 1 = Battery
- 2 = Preheater indicator light (12 V, 2 W)
- 3 = Glow duration unit
- 4 = Solenoid-operated valve
- 5 = Starting motor
- 6 = Sheathed-element glow plugs

**D10**

Checking preheating system

Peugeot 505D, 505/604 Turbo Diesel



**D11**

Checking preheating system

Peugeot 505D, 505/604 Turbo Diesel



## Checking the preheating system (continued)

yes

### Checking the safety circuit

Connect a voltmeter to the R sheathed-element glow plug and ground. Bring the glow-plug and starting switch into setting St and then into setting M. The voltmeter must indicate a voltage for the time shown at the ambient temperatures below:

	2.5 l eng.	2.3 l eng.
0° C for 16...20		43...81 sec.
+ 10° C for 15...19		36...75 sec.
+ 20° C for 14...18		29...69 sec.
+ 30° C for 13...17		22...63 sec.
+ 40° C for 12...16		15...57 sec.

After the prescribed time has passed, the voltmeter must read 0 V.

Does the voltmeter return to 0 V after the prescribed time?

no

Take out and replace the glow duration unit.

yes

Check the preheating when the starting motor is turned on. Connect a voltmeter to the R sheathed-element glow plug and ground. Bring the glow-plug and starting switch into setting D. The voltmeter must indicate a voltage of 6...10V. Is there voltage present?

no

1. Check the lead from the glow-plug and starting switch Term. 50 to the glow duration unit Term. 4 for a break. Eliminate any break.
2. If point 1 is O.K., then take out and replace the glow duration unit.

yes

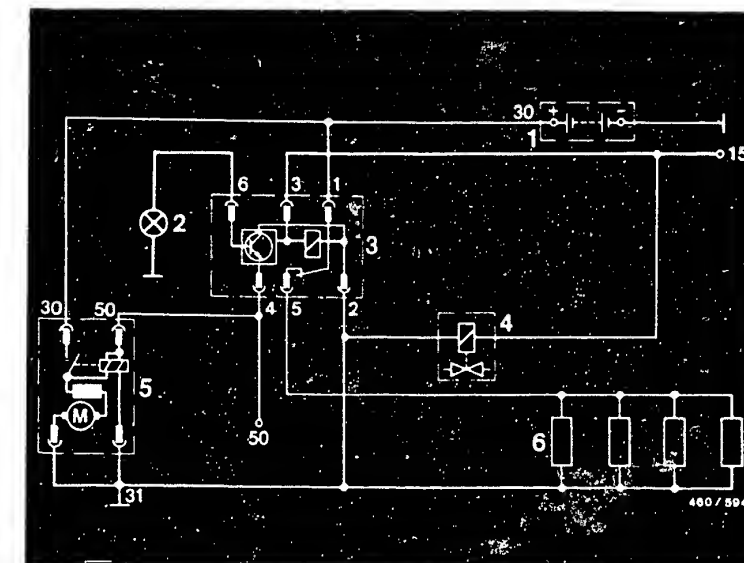
Check the R sheathed-element glow plugs. Check the R sheathed-element glow plugs individually for continuity using an ohmmeter. Does the R sheathed-element glow plug have continuity?

no

Take out and replace the R sheathed-element glow plug.

yes

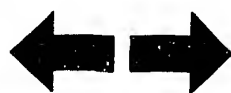
Preheating system O.K.



- 1 = Battery
- 2 = Preheater indicator light (12 V, 2 W)
- 3 = Glow duration unit
- 4 = Solenoid-operated valve
- 5 = Starting motor
- 6 = Sheathed-element glow plugs

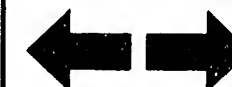
**D12**

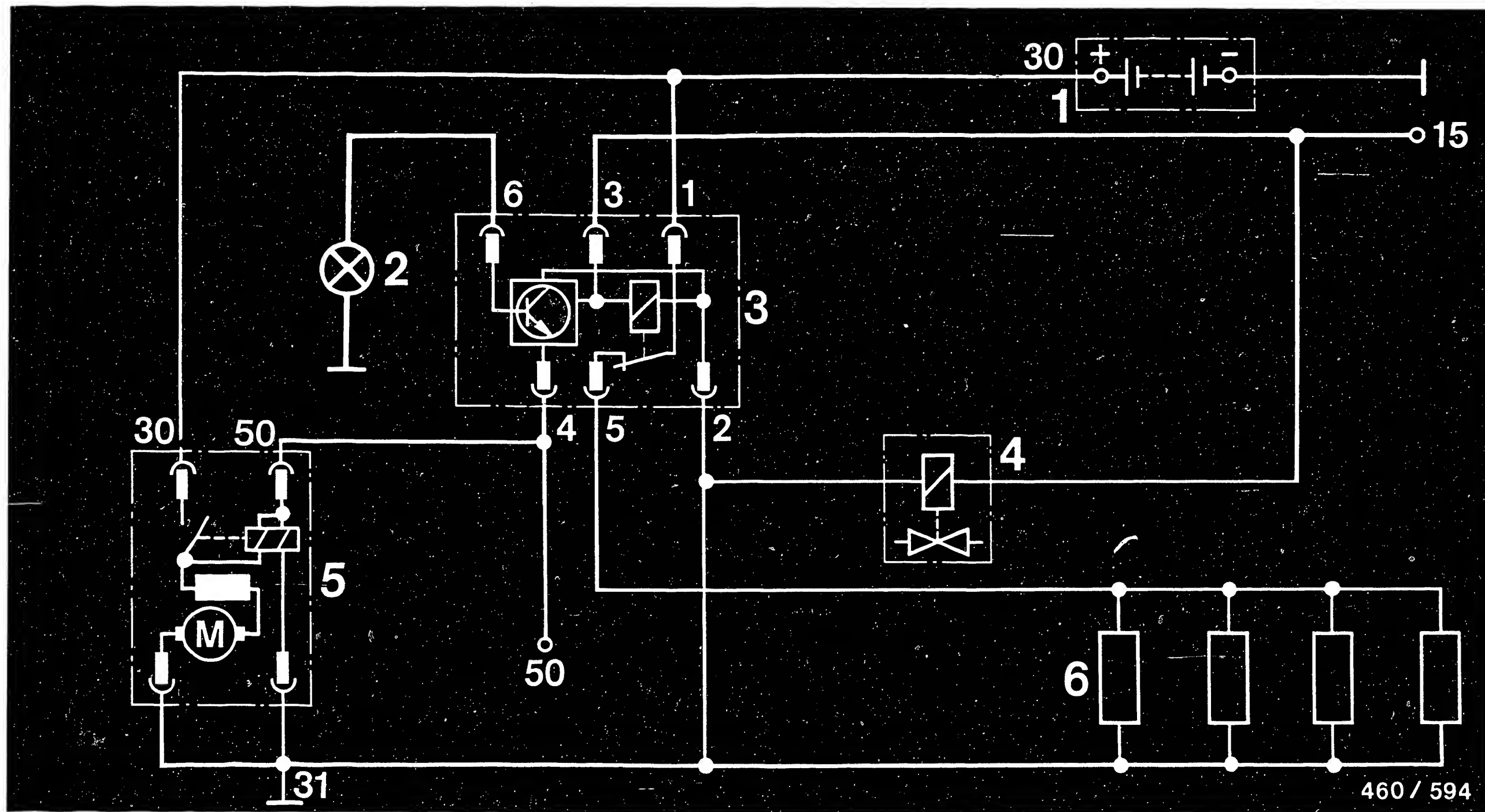
Checking preheating system  
Peugeot 505D, 505/604 Turbo Diesel



**D13**

Checking preheating system  
Peugeot 505D, 505/604 Turbo Diesel





1 = Battery  
2 = Preheating indicator light (12 V, max. 2 W)

3 = Glow duration unit  
4 = Solenoid-operated valve

5 = Starting motor  
6 = Sheathed-element glow plugs

Connection diagram for preheating system

**D14**

Checking preheating system

Peugeot 505D, 505/604 Turbo Diesel



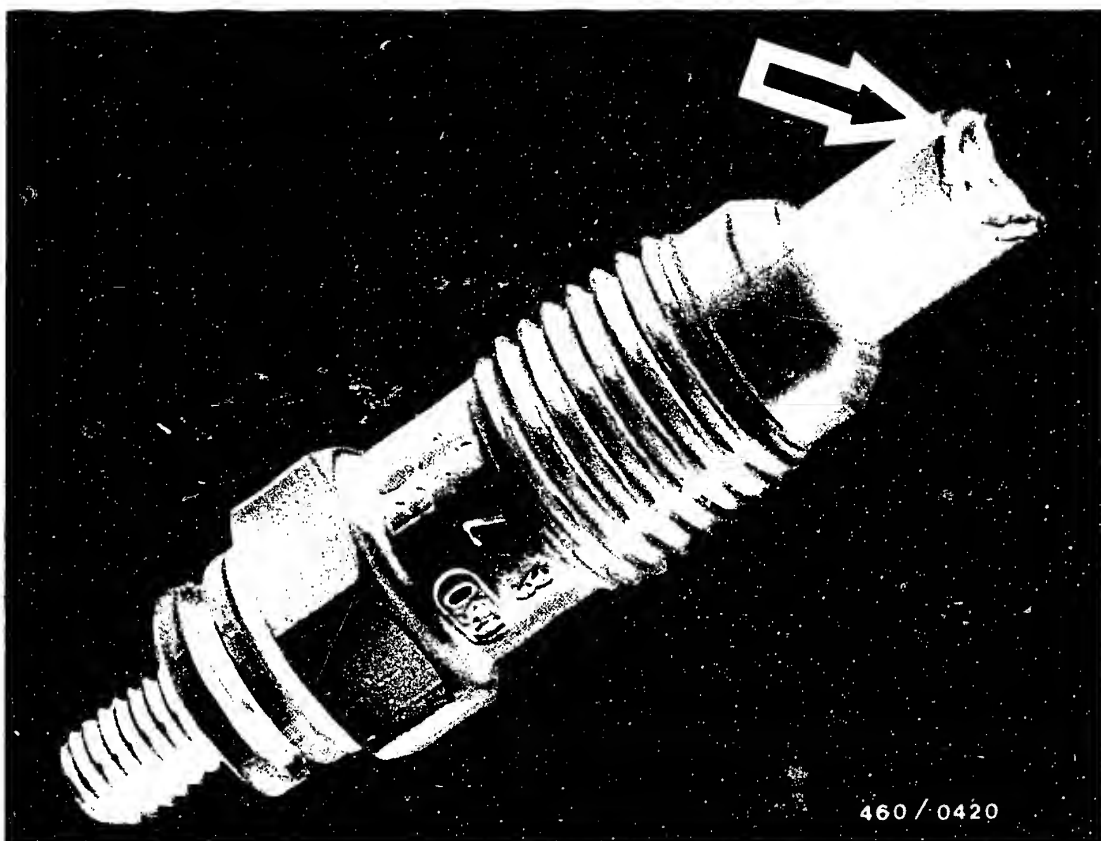
**D15**

Checking preheating system

Peugeot 505D, 505/604 Turbo Diesel



460 / 594



Note:

Glow plugs with burnt glow elements

Glow plugs with burnt glow elements are frequently secondary damage due to nozzle problems.

If, when a complaint has been made, glow plugs of this type are found (arrow), it is not sufficient merely to replace them. The fuel-injection nozzles must also be tested for spray pattern, chatter, pressure, and leaks.



### 23. Checking the timing device

In the case of the distributor-type fuel-injection pumps VE..F.., the timing device is integrated into the fuel-injection pump.

The fuel-injection pump must be taken out in order to test the timing device.

The test is done on the fuel-injection pump test stand.







## 24. Measuring engine compression and compression loss

### 24.1 Measuring engine compression

Put a new sheet of graph paper into the compression pressure recorder. Fasten a high pressure hose to the recorder. Shut off the engine.

In order to prevent fuel from being injected, remove the connecting lead at the shutoff solenoid for the distributor-type fuel-injection pump (Figure).



Unscrew the sheathed-element glow plugs and use a suitable connecting nipple for the compression pressure tester.

Turn the engine several times using the starting motor, so as to remove loose remnants from the compression chamber.

Screw in the connecting nipple.

Mount the high pressure hose for the compression pressure tester on the connecting nipple.

In the job step below, watch particularly the first compression stroke.

Activate the starting motor until no further increase in pressure can be detected on the compression pressure recorder.

Bleed the compression pressure recorder by pressing on the bleeder valve.

The needle returns to its initial position when this is done.

Move the graph paper to the next position.

Fasten the connecting nipple to the cylinders that follow and repeat the measurement.

Compression pressure: 25 ... 30 bar

Allowable deviation between cylinders: max. 5 bar



## 24.1.1. Evaluation of the graph

### 1. Normal pressure rise

If the piston rings and valves are proper, the first compression stroke shows the greatest increase in pressure. During the subsequent compression strokes, the compression pressure builds up to the maximum pressure.

### 2. Step-by-step increase in pressure

If the compression pressure increases only step-by-step per piston stroke from the start on, that indicates burnt valve seats or inadequate valve guidance.

### 3. Insufficient max. pressure

If the max. compression pressure attained is too low at all cylinders, that indicates defective pistons, piston rings, or valves. Inadequate compression pressure at two adjacent cylinders indicates a leak in the cylinder head gasket.



#### 4. Variations in compression pressure

If one cylinder shows a compression pressure clearly lower, proceed as follows:

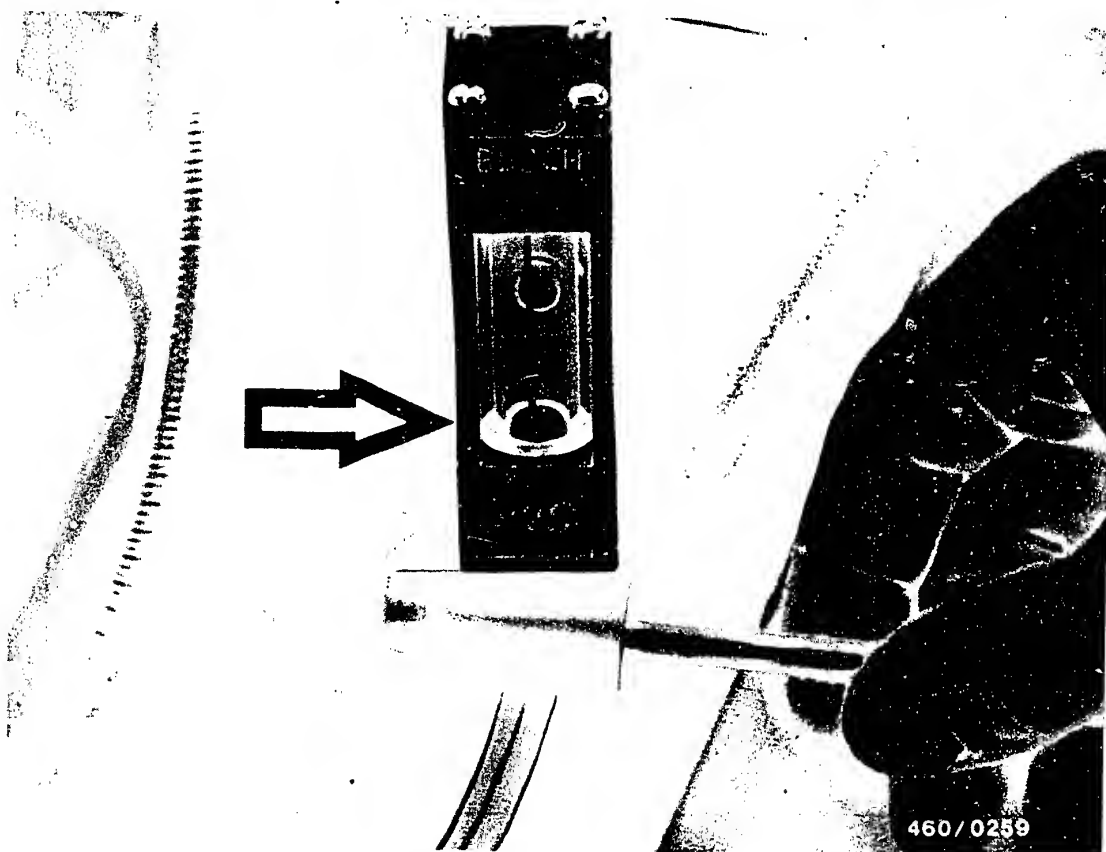
Through the opening in the sheathed-element glow plug or the nozzle holder, put in 2 ... 3 cm<sup>3</sup> of motor oil and run the starting motor briefly.

Repeat the tests and compare the graph sheets. If the compression pressure is clearly higher in the second test, there is wear on the piston rings or the cylinder. If the result does not change, damaged valves are the cause.

#### 5. Uniform compression pressure

A uniform compression pressure is of very great importance for smooth running of the engine. For that reason, it is not sufficient merely to strive for as high a compression pressure as possible.





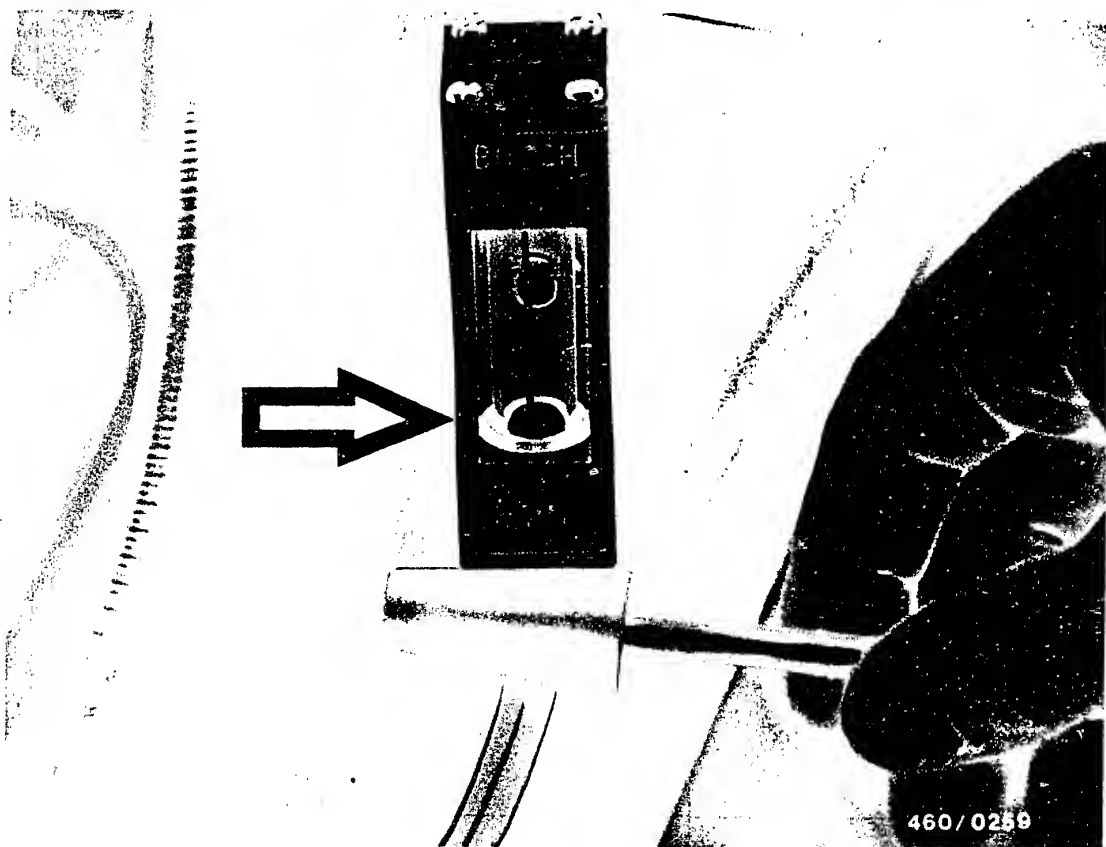
## 24.2 Measuring the compression loss in the engine

The Bosch compression loss tester 0 681 001 901 (EFAW 210 A) is used for the test.

To test, the cylinder in question must be at the TDC position (TDC = top dead center) of the compression stroke.

To adjust that point, the D.C. detector 1 688 132 025 (included in the accessories for the compression loss tester) is used.

Test with the engine at normal operating temperature (water temperature approx. 80°C).



#### 24.2.1 Setting the TDC

Take out the first cylinder sheathed-element glow plug.

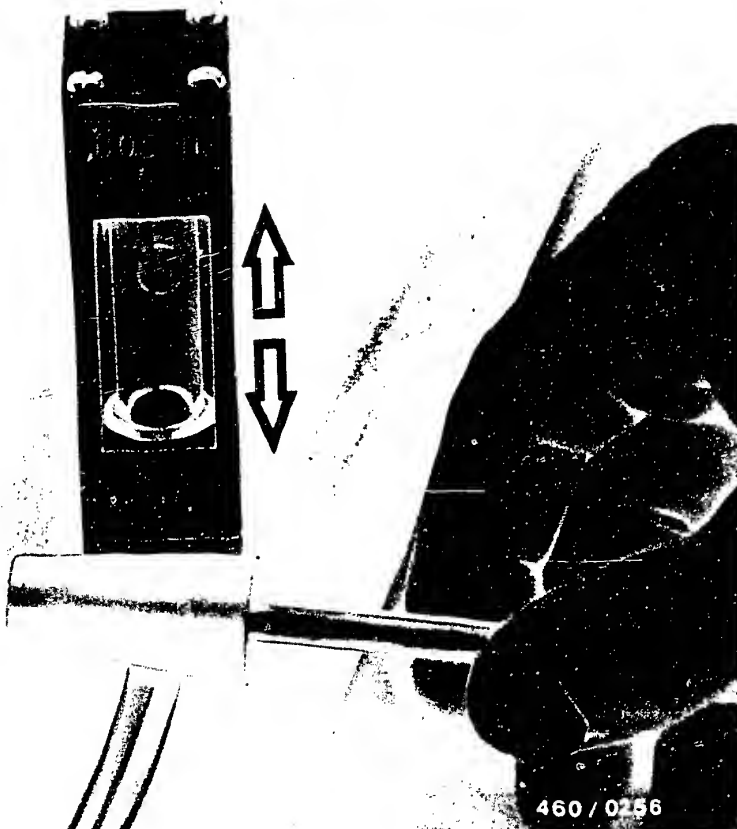
Insert the rubber stopper of the D.C. detector into the hole for the sheathed-element glow plug.

Fasten the glass cylinder on the magnetic bracket in the engine compartment in as vertical a position as possible.

The plunger on the instrument must be clearly visible.

Slowly turn the engine by hand in the direction of engine rotation. (If need be, put into gear and move the vehicle.)



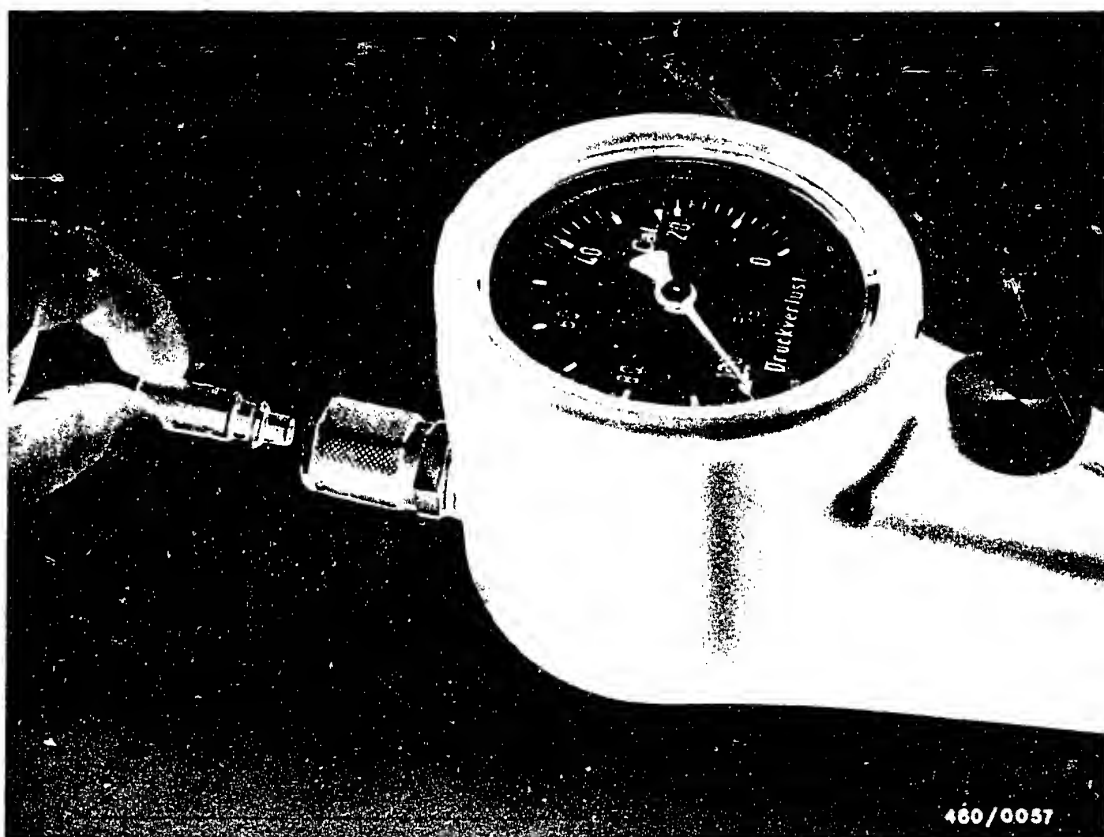


On the compression stroke, the plunger of the D.C. detector is pushed upward.

When the top dead center is passed, the plunger slides immediately downward.

Locate the dead center by moving the engine back and forth carefully.





#### 24.2.2 Measuring compression loss

Connect the tester to the existing compressed air system.

Connect up test nozzle 1 680 363 036.

Set a compression loss of  $23 \pm 1\%$  (marking "Cal") on the knurled screw of the pressure regulating valve.

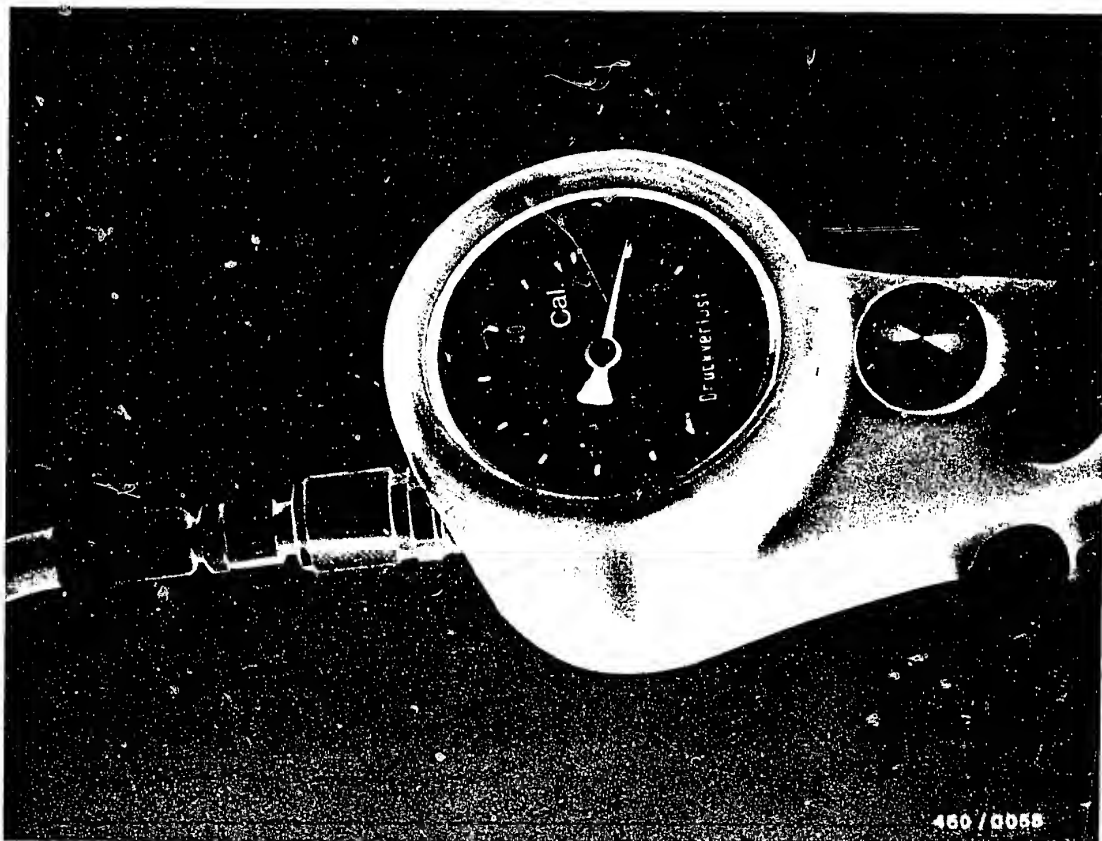
(The gauge needle must indicate approximately 0 % compression loss - checking of the instrument.)

**E1**

Measuring eng.compression and compr.loss  
Peugeot 505D, 505/604 Turbo Diesel







Screw in the connecting pipe and put on the test hose.

Shift into gear and apply the handbrake.

Connect the test hose to the tester.

Read the compression loss on the instrument in %.

Note:

Before taking measurement on the next cylinder, run the engine briefly with the starting motor, without pre-heating, in order to restore the oil film.



### 24.2.3 Evaluation of the test

The reading for compression loss must not exceed 25 %.

Differences between the individual cylinders of 10 % are without significance.

If there are larger leaks, these can be localized because the air coming out causes noise.

Listen at the following points:

<u>Noise locations</u>	<u>Possible cause of problem</u>
Intake manifold (remove air filter)	Intake valve
Exhaust manifold	Exhaust valve
Oil filling pipe on the engine	Pistons, piston rings
Cooling water filler neck (air bubbles)	Cylinder head gasket

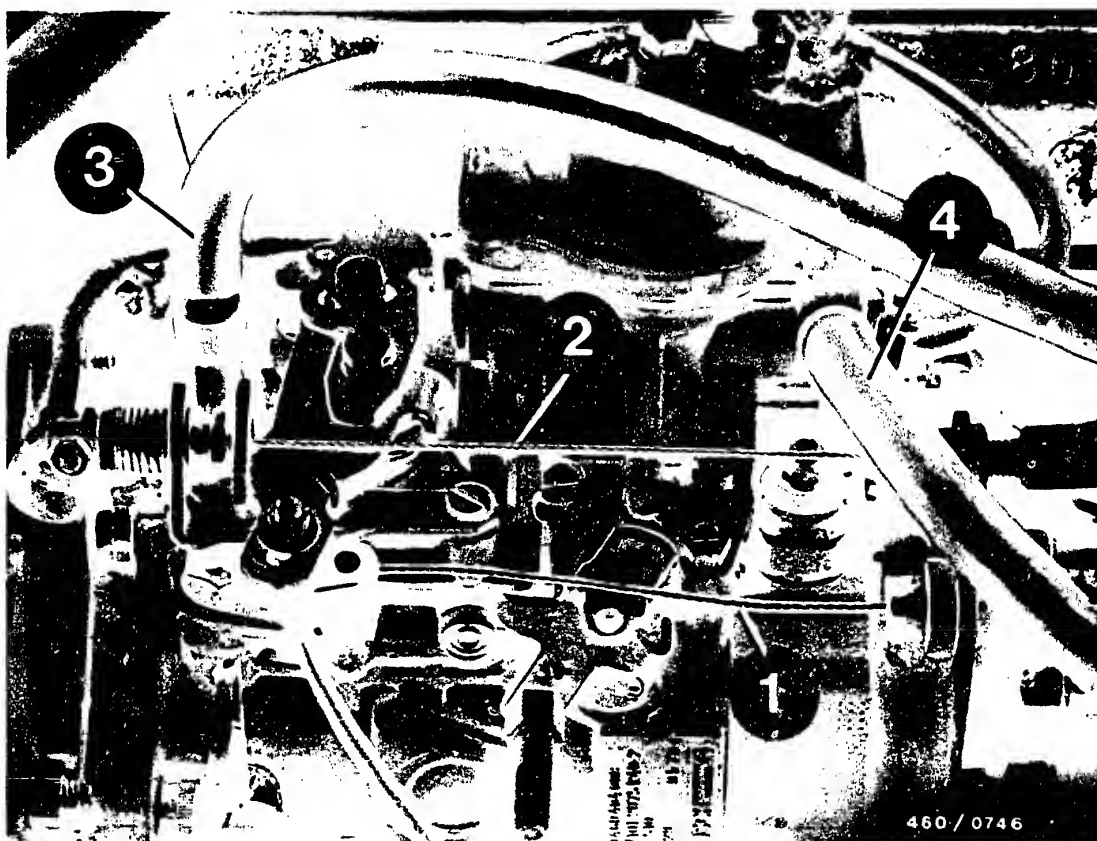
In order to make it easier to locate the source of the problem, put approx. 2...3 cm<sup>3</sup> motor oil into the cylinder.

Repeat the test.

If the compression loss is clearly less during the test, the problem lies with the piston or the piston rings.

In the case of new engines that have not yet been broken in (less than 5000 km), greater compression losses are possible than after the breaking-in time.





### 25. Taking out the fuel-injection pump

Take out the battery and the battery bracket.

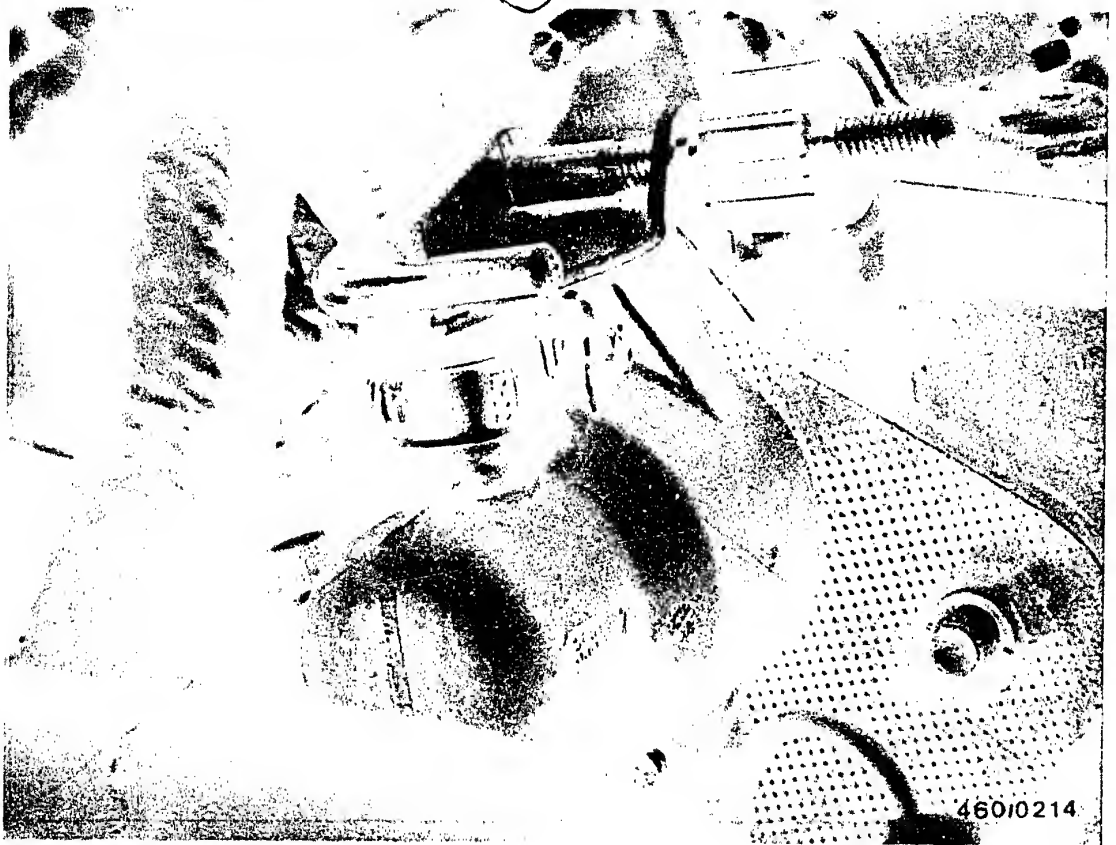
Remove the cable on the fuel-injection pump control lever (1), the cable for fast idle (2), the fuel supply line (3), and the fuel return line (4).





Release the fuel-injection lines (1) using open-end box wrench KDEP 1115. (Prevent the delivery valve holders from becoming loose by holding them with a wrench.)

Remove the support bracket (2) on the hydraulic head.



XD 3 T - 2.5 l engine only

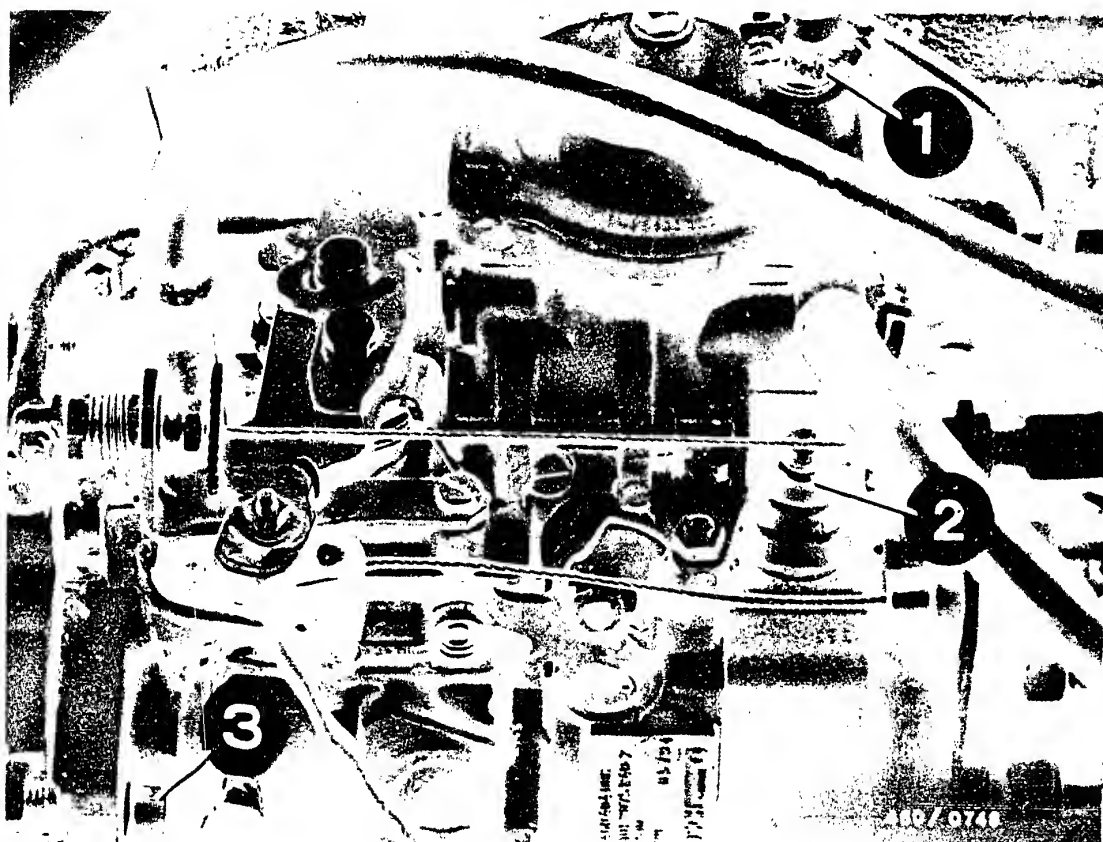
Pinch off the cooling water hoses close behind the control device for the fuel-injection pump, using commercially available pinching clamps (see the Figure).

Release the hose clamps and take off the cooling water hoses.

**E6**

Taking out fuel-injection pump  
Peugeot 505D, 505/604 Turbo Diesel





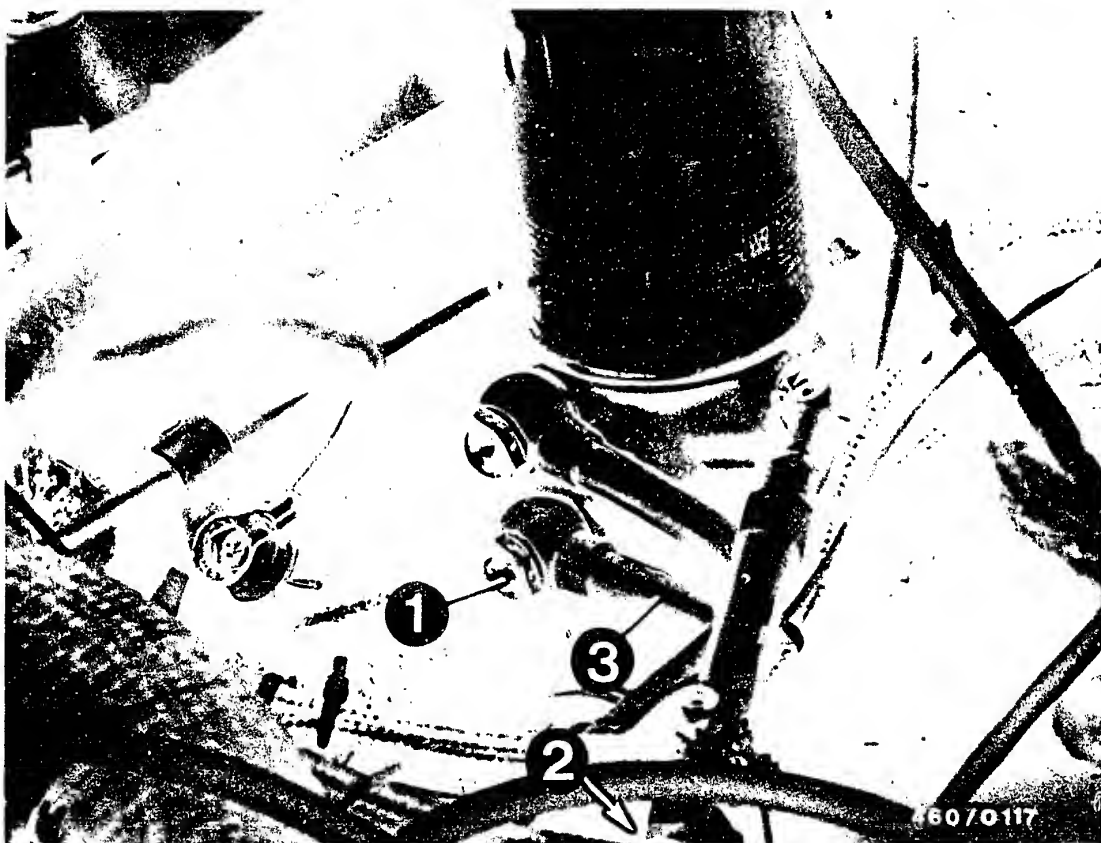
Remove the hose connection for charge-air pressure (1) - not in the case of the 505D with XD3 2.5 l engine, - the lead for the electrical shutoff device (2), and the fastening screws for the fuel-injection pump (3).

Take the pump off the engine. In so doing, be careful of the gasket.

**E7**

Taking out fuel-injection pump  
Peugeot 505D, 505/604 Turbo Diesel





### 26. Putting in fuel-injection pump

Remove the fan funnel.

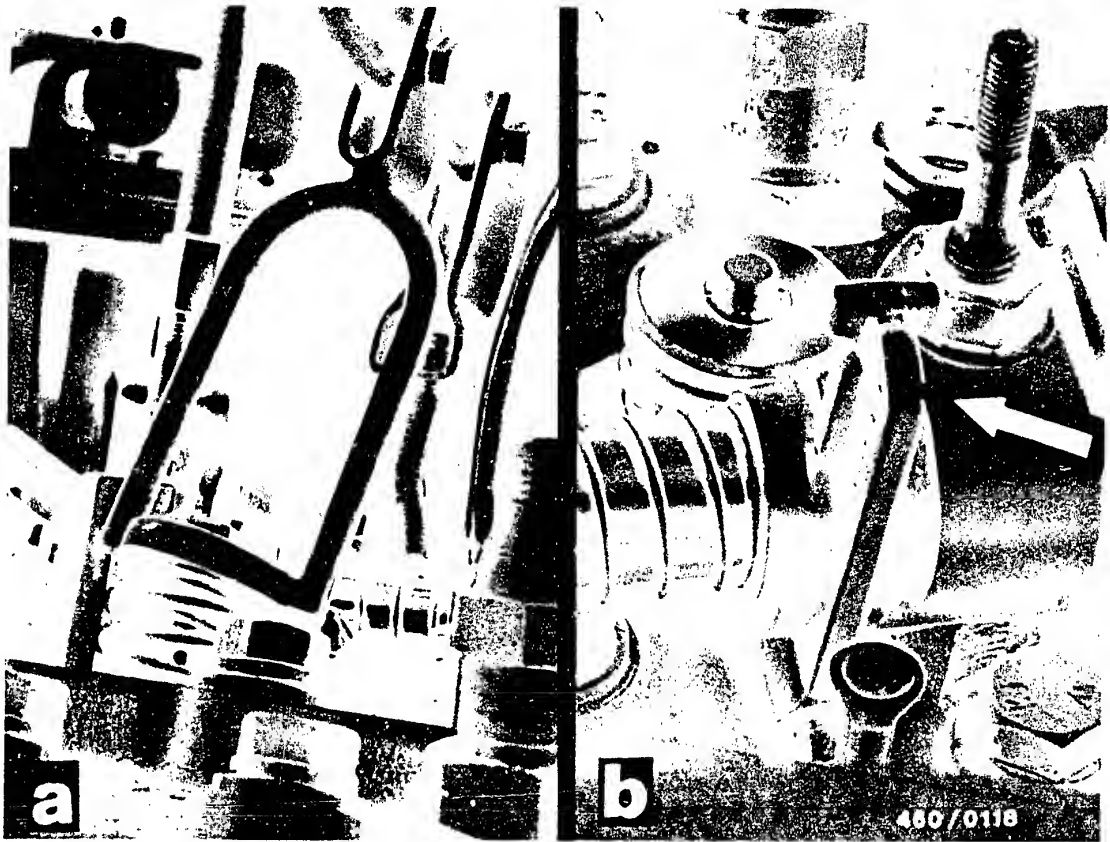
Turn the crankshaft, using a box wrench.

Remove the cylinder head cover.

Unscrew the lower fastening screws (1) on the oil filter and the screw (2) on the oil cooler.

Lay the line (3) to the side.





Turn the crankshaft so that the exhaust valve just opens in the BDC position of the 1st cylinder.

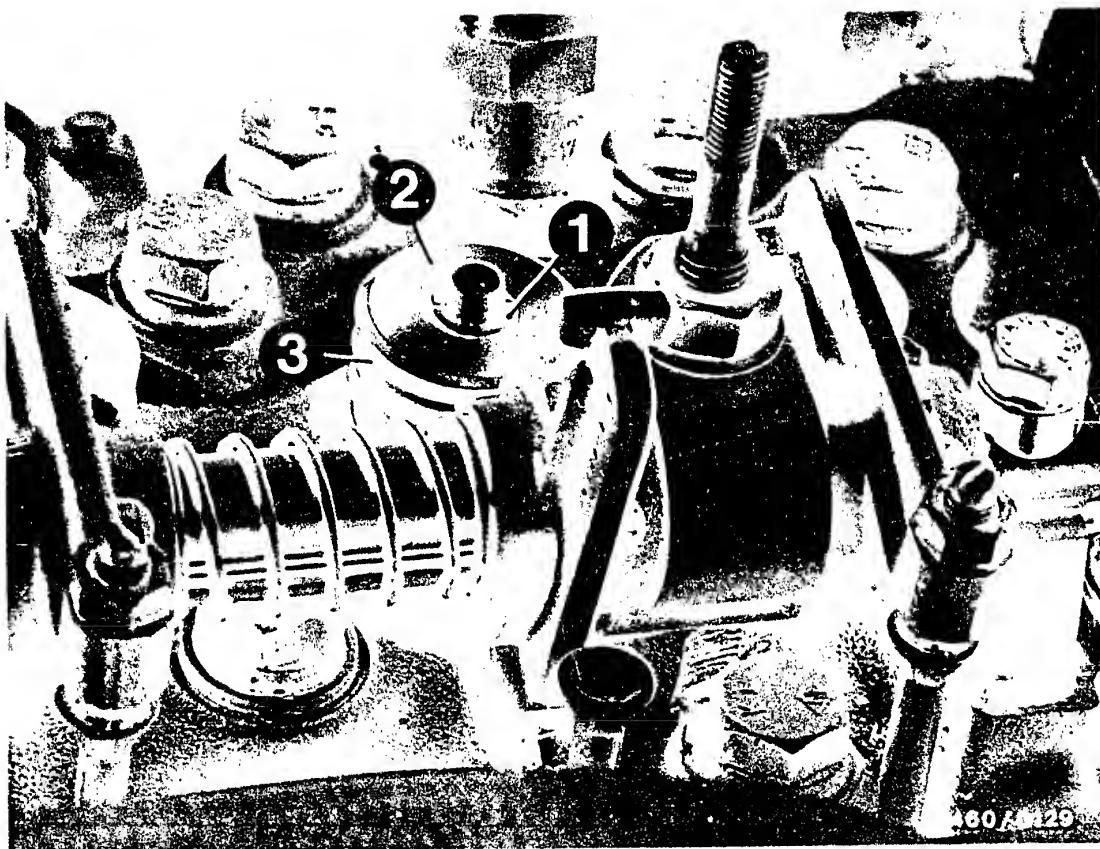
Insert tool 8.0105 Y into the rocker arm shaft and press the spring of the exhaust valve on the 4th cylinder down (Figure, a).

Shove the rocker arm in so doing against the pressure spring on the rocker arm shaft, and set it up in a vertical position.

In that position, move it to its initial location (Figure, b).







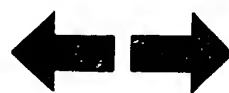
Turn the crankshaft in the direction of engine rotation until the 4th cylinder is in the TDC position.

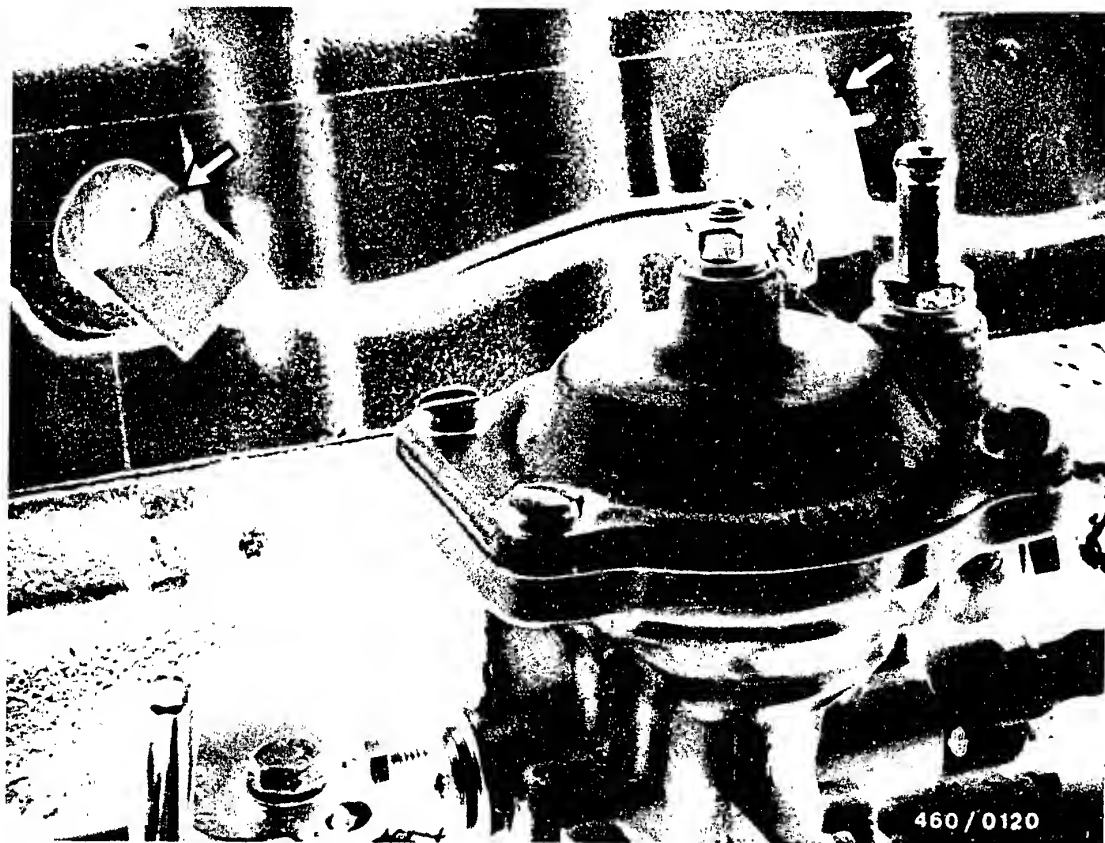
When this is done, the valves of the 1st cylinder are at overlap.

Press the valve spring for the exhaust valve of the 4th cylinder down using tool 8.0105 Y.

Remove the valve collets (1) from the exhaust valve.

Release the valve spring, remove the spring plate (2) and the valve spring (3) from the valve.





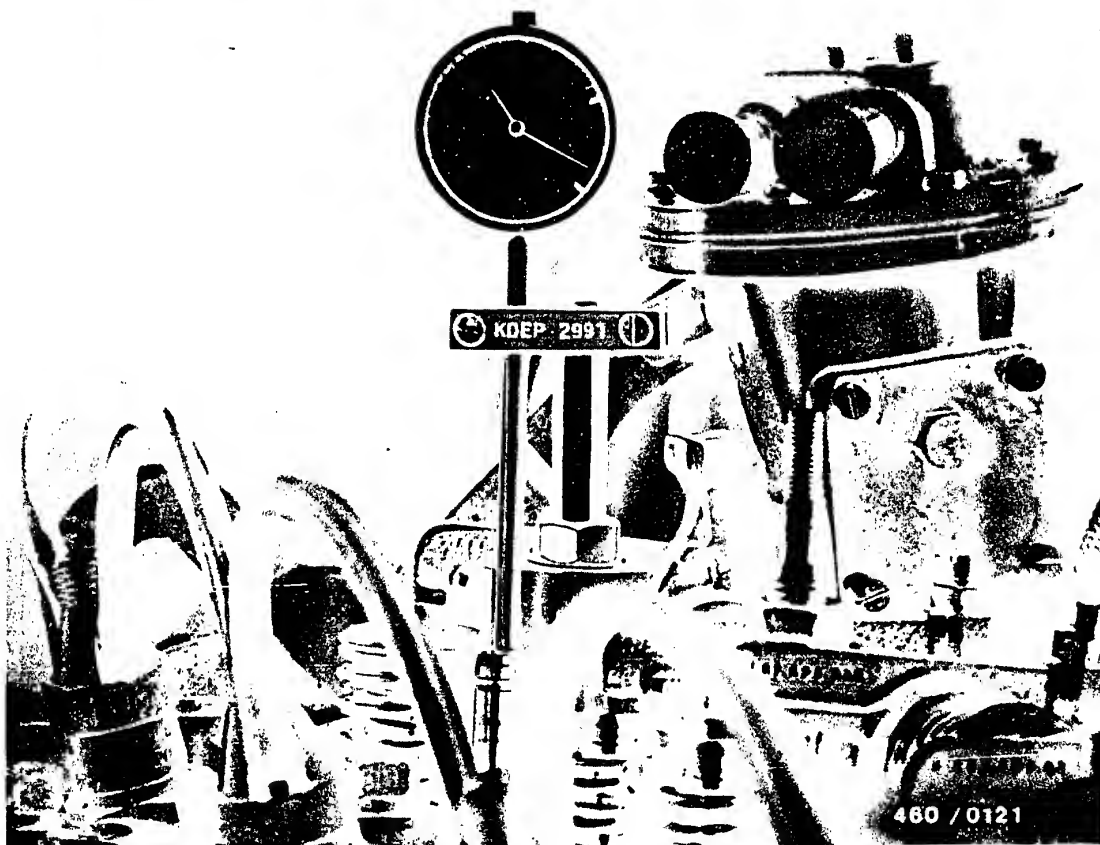
The exhaust valve of the 4th cylinder now lies up against the engine piston.

Take out the sheathed-element glow plugs for the 3rd and 4th cylinders (arrows).

**E11**

Putting in fuel-injection pump  
Peugeot 505D, 505/604 Turbo Diesel





Screw measuring tool KDEP 2991 on the threaded bolt of the 4th cylinder.

Clamp the dial indicator 1 687 233 012 with the long measuring base into measuring tool KDEP 2991.

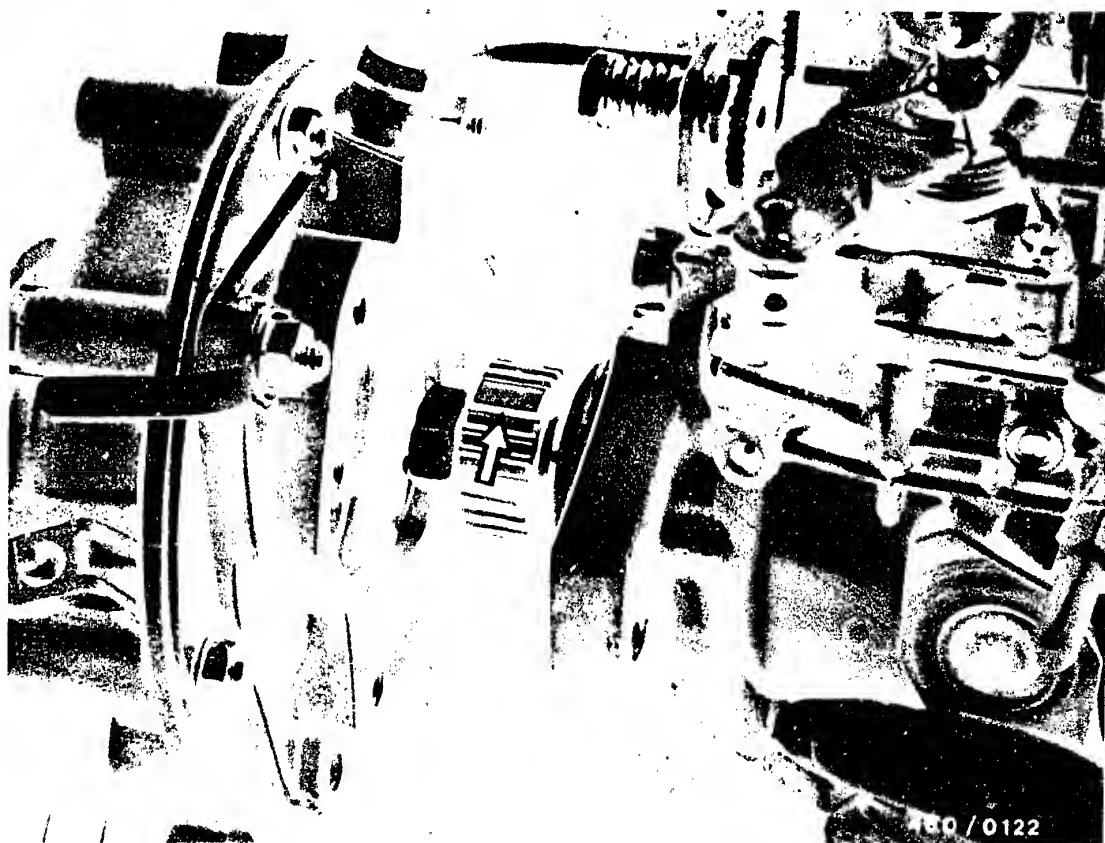
The measuring base lies on the exhaust valve of the 4th cylinder. Prestress the dial indicator approx. 10 mm.

Turn the crankshaft counter to the direction of engine rotation until the piston has made a stroke of approx. 7 mm.

Turn the crankshaft back in the direction of engine rotation to the TDC setting of the 4th cylinder.

Set the dial indicator at "0".





Turn the drive shaft of the fuel-injection pump so that the marking on the drive pinion points approximately in the direction of outlet "B" (see the Figure, arrow).

Glue on a new paper gasket with grease to the attachment flange for the fuel-injection pump.

Insert the fuel-injection pump into the socket of the engine.

Provisionally tighten the fastening screws (with the socket hex) of the fuel-injection pump.

**E13**

Putting in fuel-injection pump  
Peugeot 505D, 505/604 Turbo Diesel





### XD 3 T - 2.5 l engine only

In order to test and adjust the start of fuel delivery, the temperature-controlled cold-start accelerator (KSB) must be in its zero position.

For this, release the clamping screw (1) on the fuel-injection pump.

Pull the spacer piece (2) and the control lever (3) toward the hydraulic head.

Turn the spacer piece (2) by 90° and shove it back toward the drive shaft until the control lever (3) is up against the stop bracket.  
In this position, the control device is switched off.

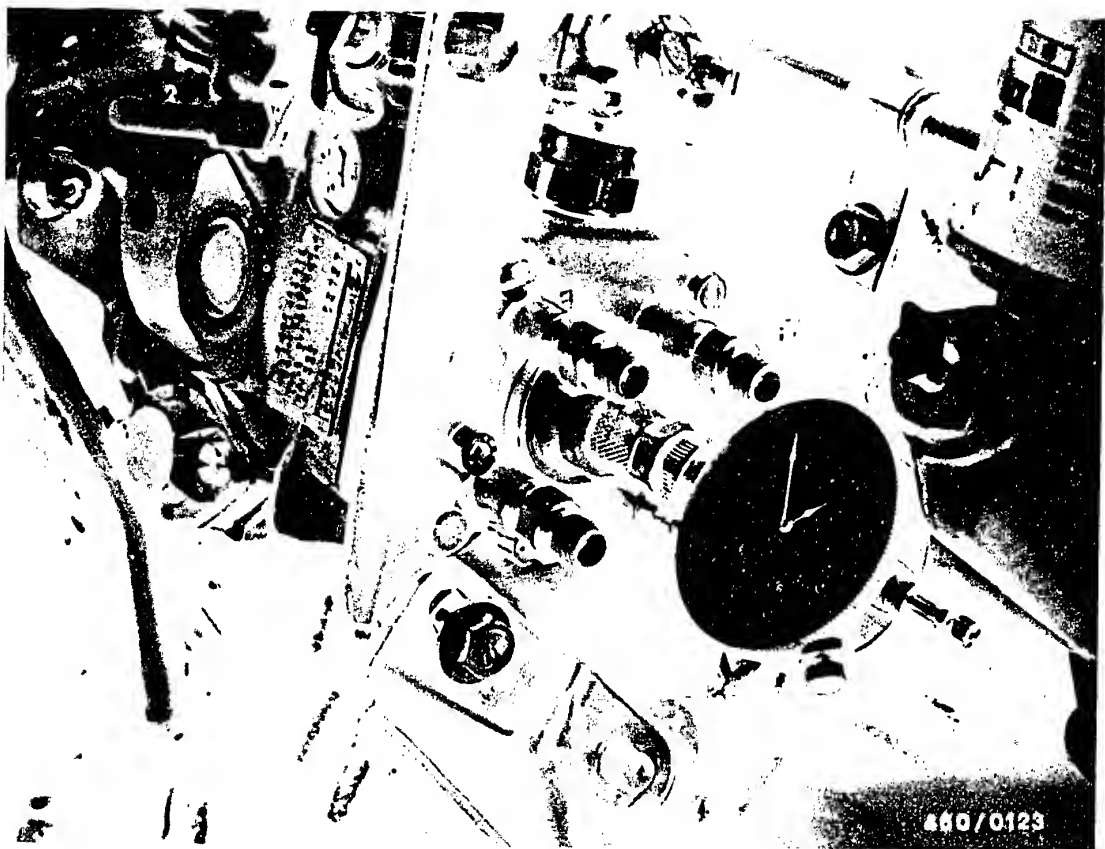
### Caution!

Do not release the locking screw (4) or it will be necessary to readjust the control device.

**E14**

Putting in fuel-injection pump  
Peugeot 505D, 505/604 Turbo Diesel





Remove the bleeder screw from the central screw plug (triangular screw) of the fuel-injection pump.

Screw measuring tool KDEP 1085 into the hole for the bleeder screw.

Put on dial indicator 1 687 233 011 or .. 012 with the measuring base, and prestress it approx. 3 mm.

Turn the crankshaft counter to the direction of engine rotation until the dial indicator shows the BDC position for the plunger of the fuel-injection pump.

Set the dial indicator at 0.





Turn the crankshaft in the direction of engine rotation until the dial indicator on the exhaust valve of the 4th cylinder indicates a piston stroke of

505D	
XD3 2.5 l engine	0.72 mm

505/604 D-Turbo	
XD2S 2.3 l engine	0.80 mm

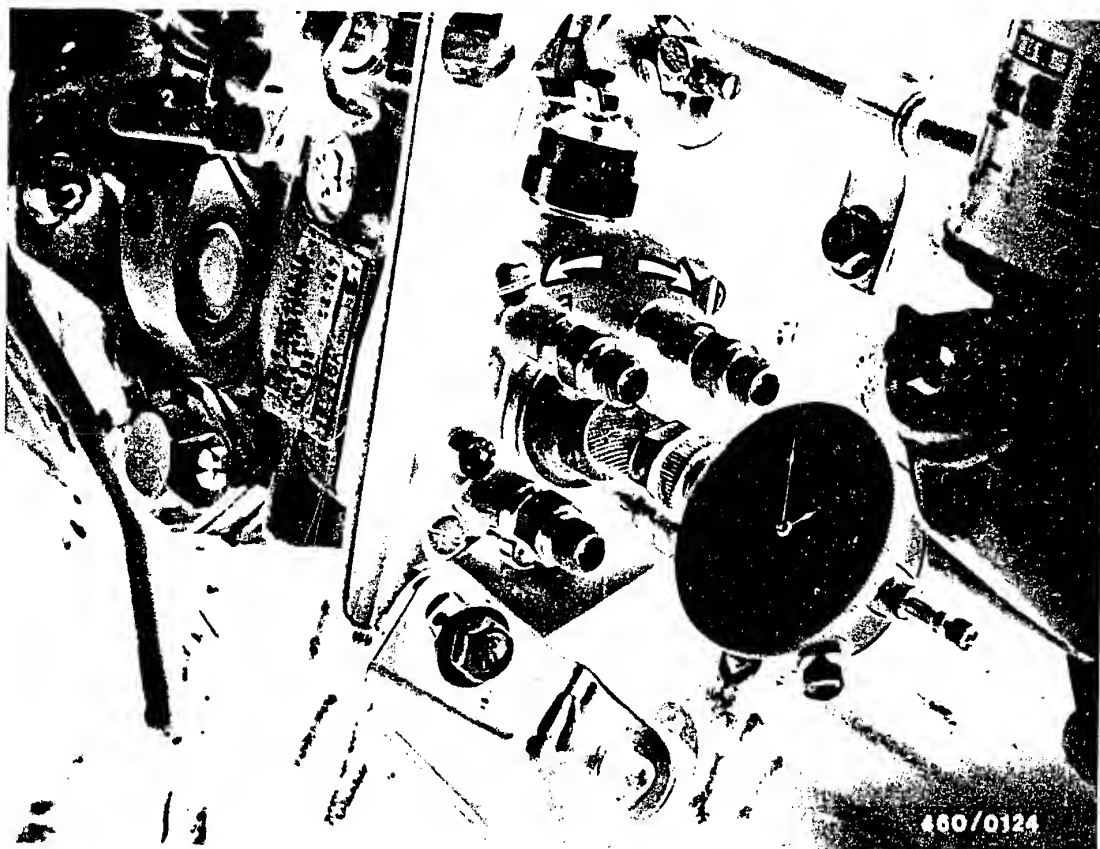
505/604 D-Turbo	
XD3T 2.5 l engine	0.89 mm

BTDC.

**E16**

Putting in fuel-injection pump  
Peugeot 505D, 505/604 Turbo Diesel





With the piston settings as indicated, the dial indicator on the fuel-injection pump must indicate a pump plunger stroke of 0.28...0.32 mm ABDC.

If need be, adjust the stroke by pivoting fuel-injection pump. To do this, the fastening screws on the fuel-injection pump (also on the support bracket) must be released.

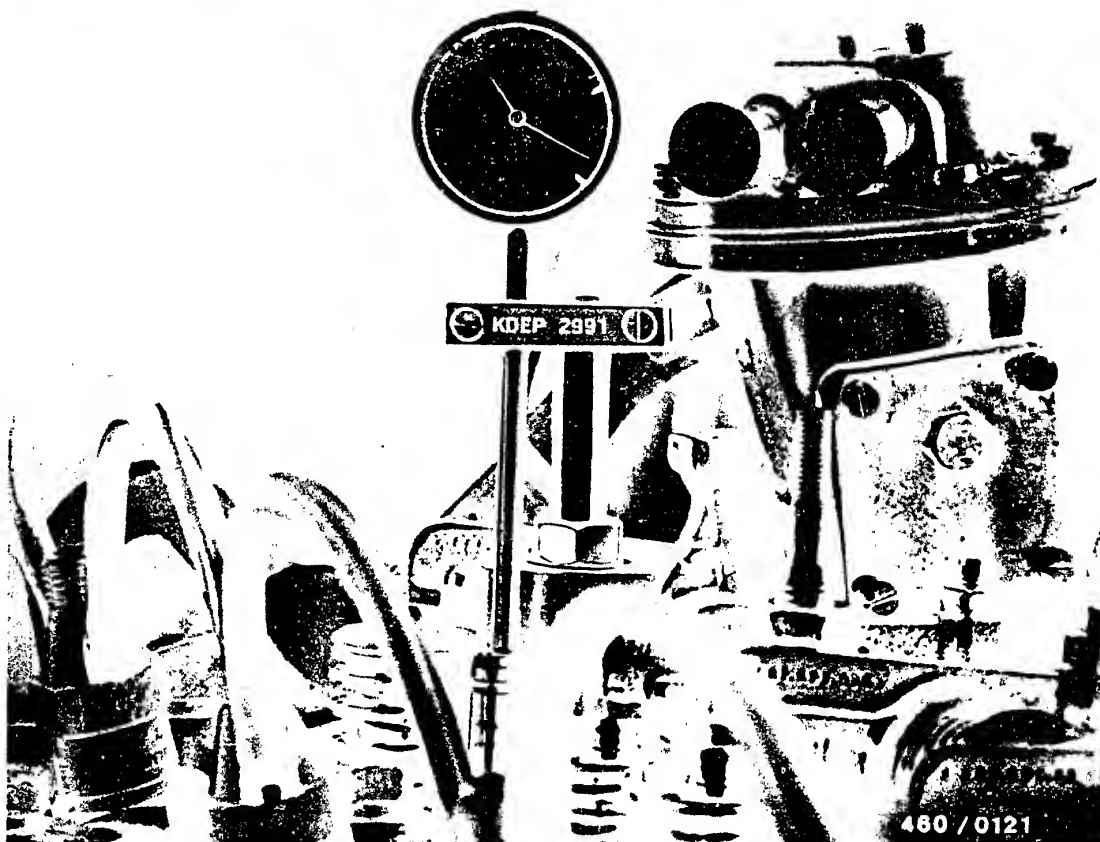
Then retighten the fastening screws to 20 Nm.

**E17**

Putting in fuel-injection pump  
Peugeot 505D, 505/604 Turbo Diesel







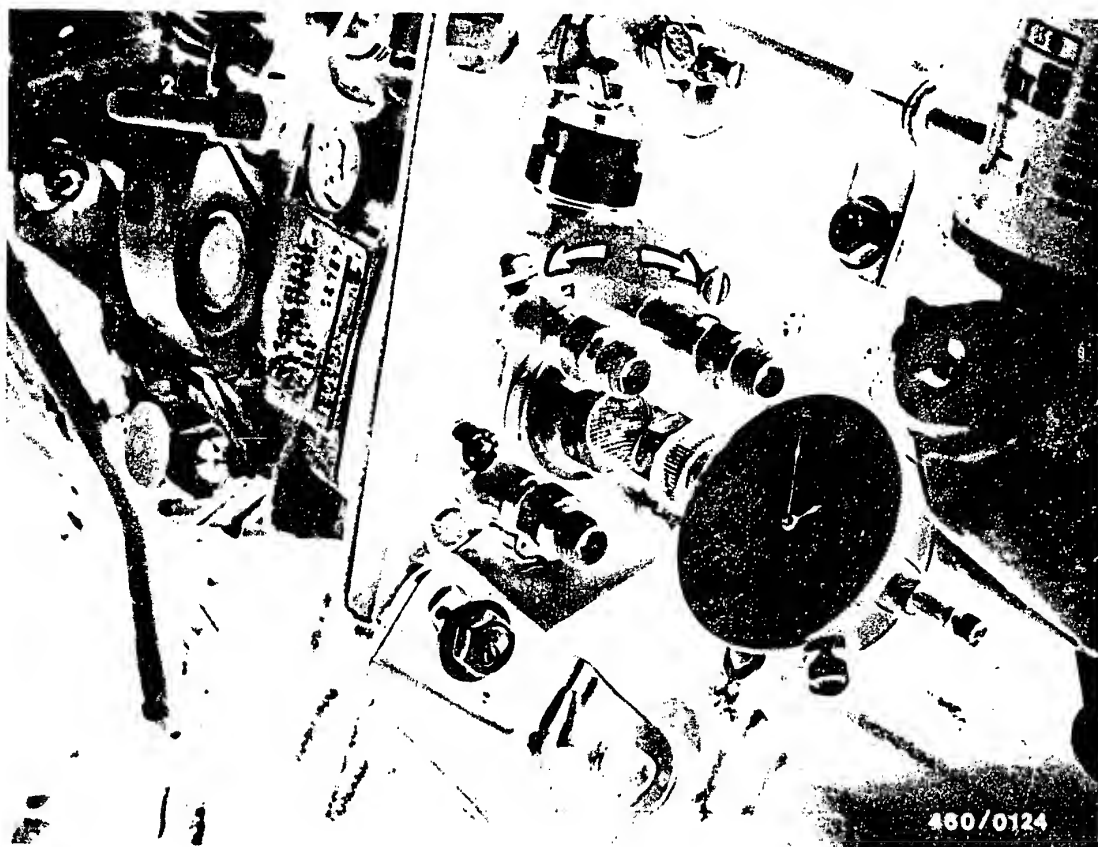
- Checking the adjustment of the fuel-injection pump with respect to the engine

Turn the engine crankshaft in the direction of engine rotation as far as the TDC setting of the 4th cylinder.

Check the 0-setting of the dial indicator on the exhaust valve.

Turn the crankshaft counter to the direction of engine rotation until the dial indicator shows a stroke of approx. 7 mm (7 rotations of the needle).





Turn the crankshaft in the direction of engine rotation until the dial indicator on the fuel-injection pump shows a stroke of 0.30 mm.

In this setting, the piston of the 4th cylinder must be

505D

XD3 2.5 l engine

0.69...0.75 mm

505/604 D-Turbo

XD2S 2.3 l engine

0.77...0.83 mm

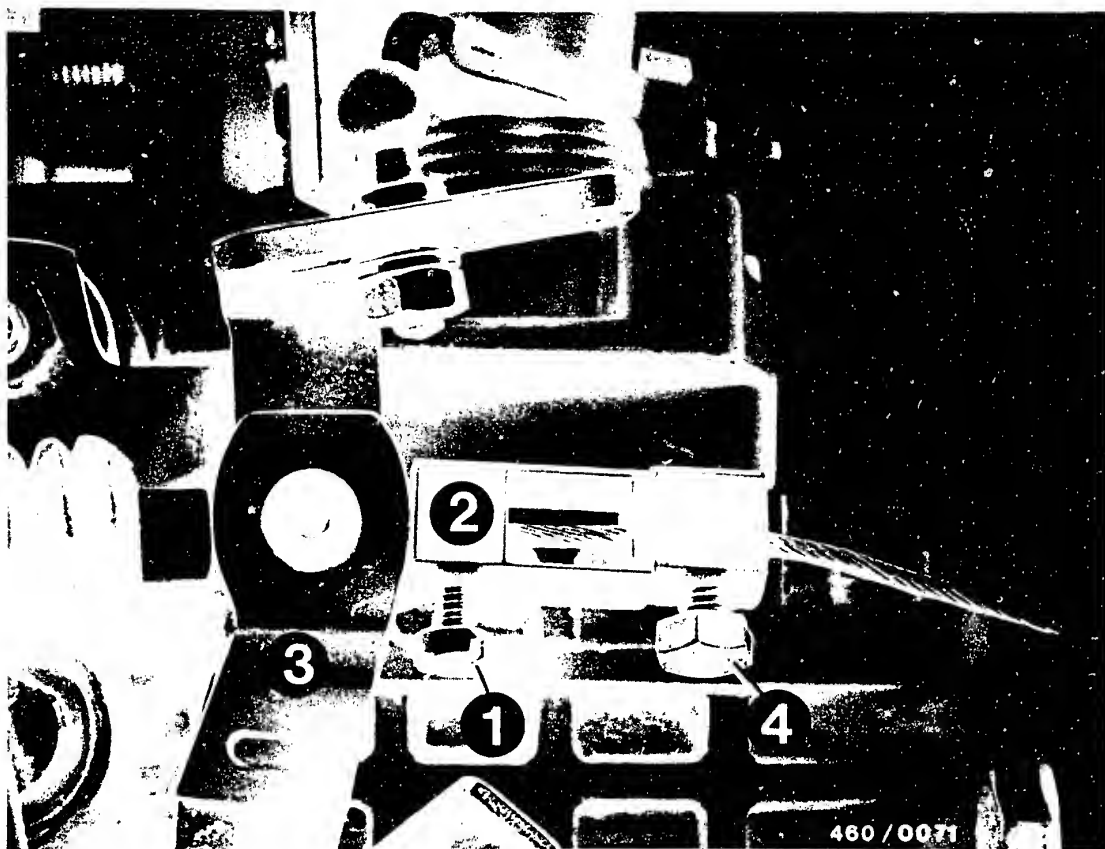
505/604 D-Turbo

XD3T 2.5 l engine

0.86...0.92 mm

BTDC.





XD 3 T - 2.5 l engine only

Pull the control lever (3) and the spacer piece (2) toward the hydraulic head.

Turn the spacer piece (2) by 90° and shove it back toward the drive shaft.

The spacer piece is now in its initial position.

Tighten the clamping screw (1).

Caution:

Do not release the locking screw (4) or it will be necessary to readjust the control device.

Remove measuring tool KDEP 1085 and dial indicator on the fuel-injection pump.

Put the bleeder screw back on using a new copper gasket ring.

Tighten the fuel-injection pump fastening screws to 20 Nm.

Bring the engine piston of the 4th cylinder into the TDC setting.

Remove the measuring tool KDEP 2991 and the dial indicator.

Put the valve spring and the upper valve plate on the 4th cylinder exhaust valve.

Press the valve spring down using tool 8.0105 Y.

Put in the exhaust valve collets. Relax the valve spring.

Turn the crankshaft so that the exhaust valve of the 1st cylinder just opens with the piston at BDC.

Press the valve spring of the 4th cylinder exhaust valve down using the spring plate.

Shove the rocker arm against the spring in the rocker arm shaft, and put it into a horizontal position.

In that position, put the rocker arm on the exhaust valve and tappet.

Remove tool 8.0105 Y.

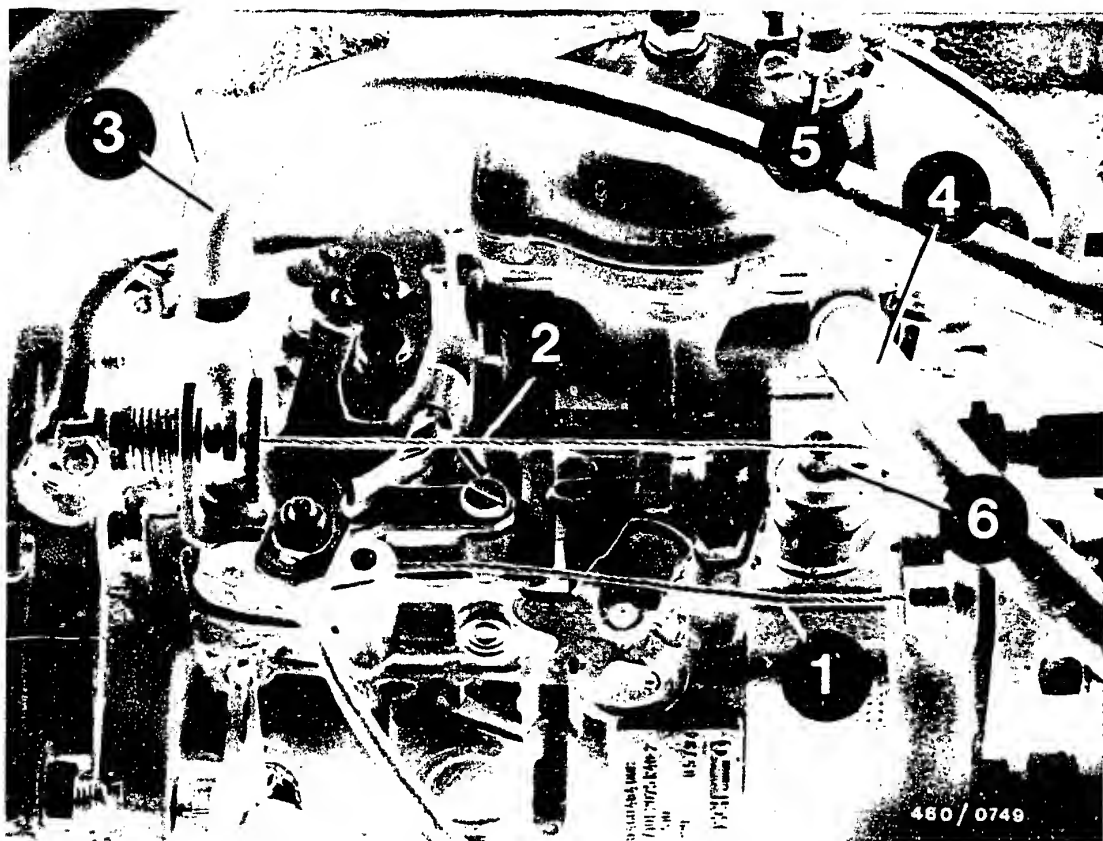
Check the valve clearance:

Check the valve clearance only with engine cold (min. 6 hrs. at rest)

Inlet valve: 0.15 mm

Exhaust: 0.25 mm





Put on the cable for the fuel-injection pump control lever (1), the cable for fast idle (2), the fuel supply line (3), the fuel return line (4), the hose connection for charge-air pressure (5) - not in the case of the 505D with the XD3 2.5 l engine - and the lead for the electrical shutoff device (6).

Note:

It is not permissible to exchange the inlet-union screws for the fuel supply and return lines one for the other. The inlet-union screw for the return line has throttle holes and is identified with the word "out" on the head of the screw.





Tighten the fuel-injection lines (1) using open-end box wrench KDEP 1115. (Prevent the delivery valve holders from turning by holding them with a wrench.)

Adjust the support bracket (2) on the fuel-injection pump hydraulic head in such a way that it touches stress-free against the cylinder block and the hydraulic head.

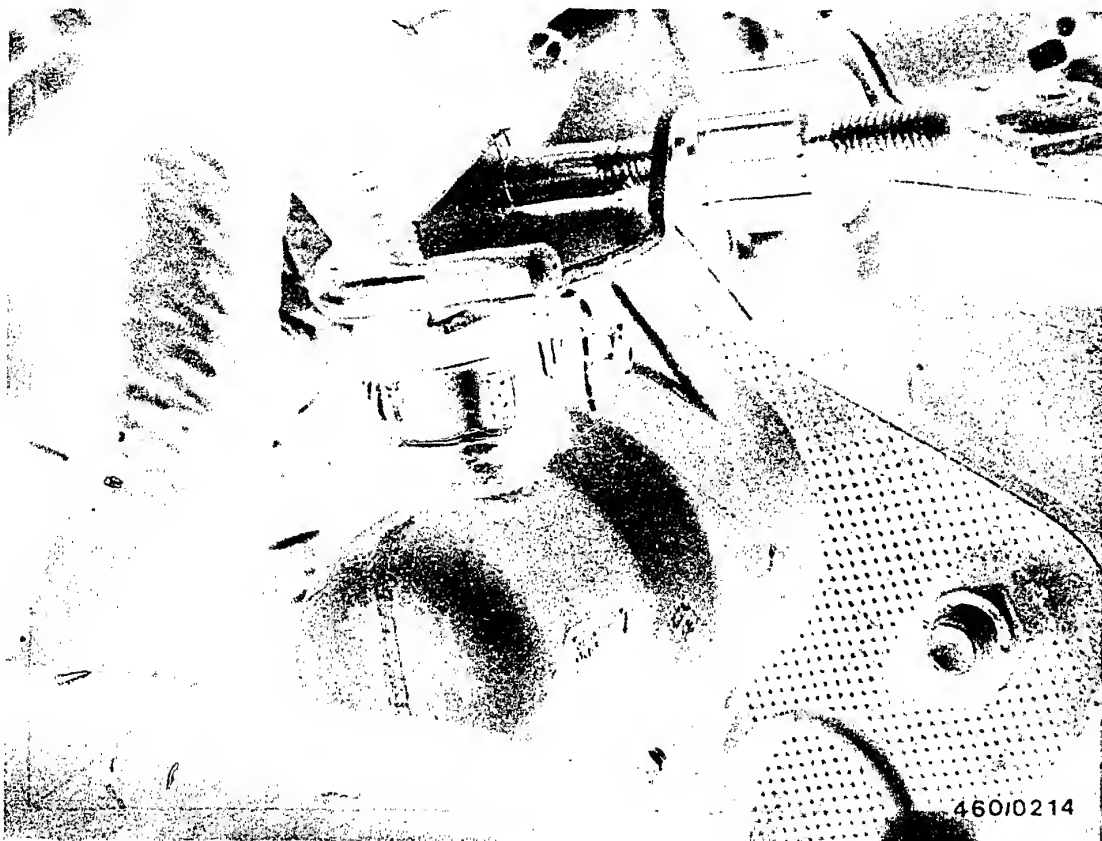
Tighten support bracket.

Put on the line from the oil cooler to the oil filter, cylinder head cover, and fan funnel.

Put in the sheathed-element glow plugs for the 3rd and 4th cylinders.

Screw in the battery bracket, install the battery, and connect it.



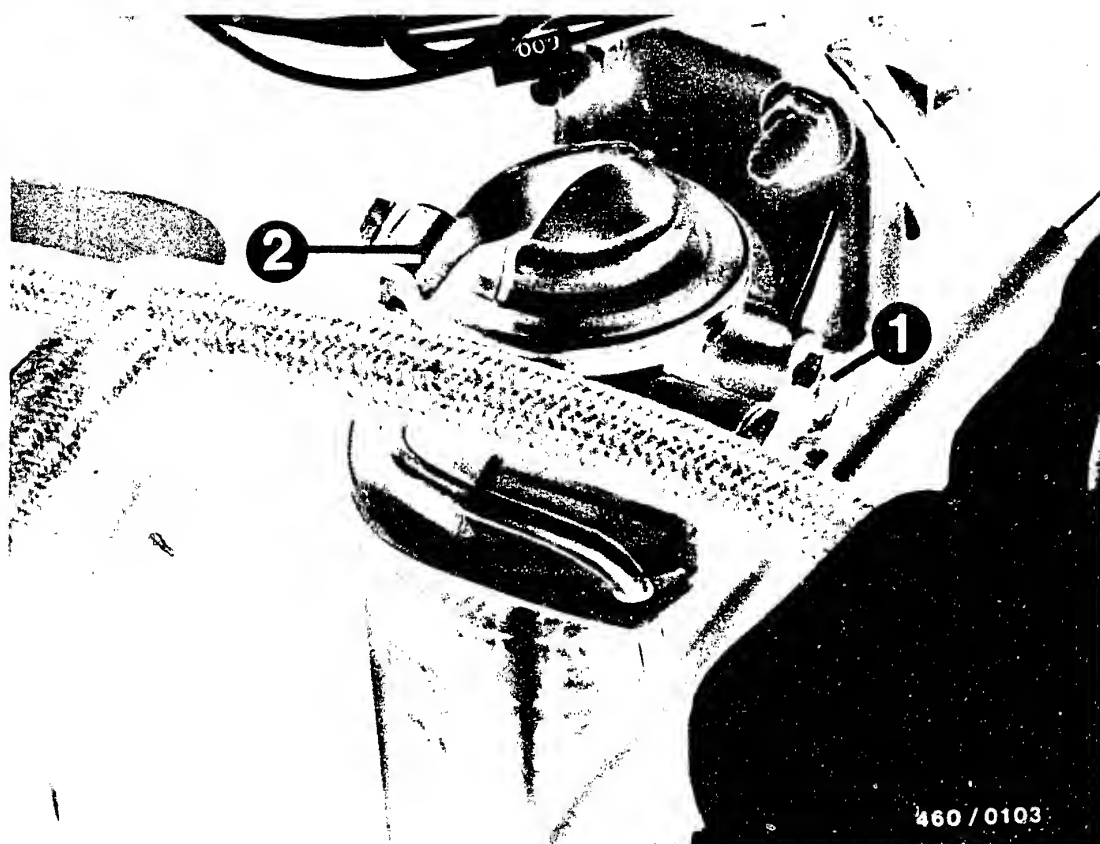


XD 3 T - 2.5 l engine only

Connect the coolant lines to the control device for the fuel-injection pump and remove the pinching clamps.

Tighten the hose clamps.





### 26.1 Bleeding the fuel system (XD 2 S - 2.3 l engine)

Release the bleeder screw (1) and operate the handpump (2) until the fuel coming out at the bleeder screw (1) is free of bubbles.

Retighten the bleeder screw (1).

Continue working the handpump (2), until resistance is felt.

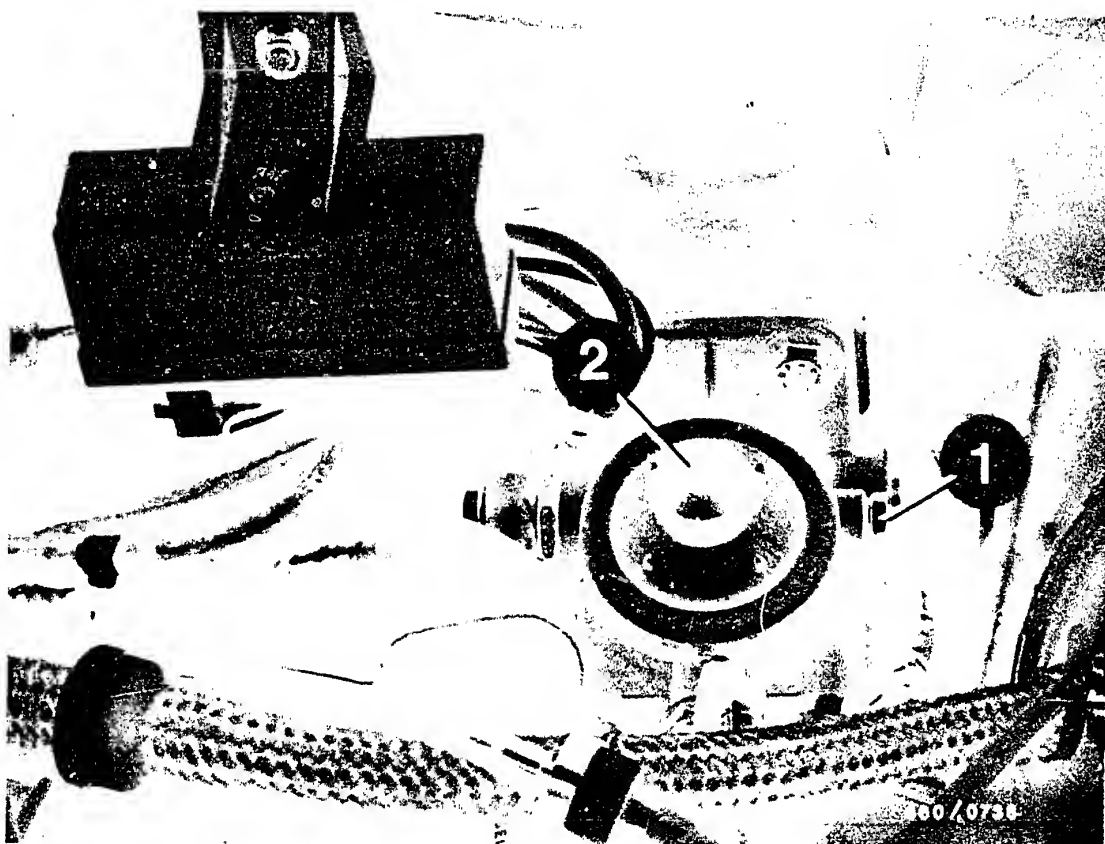
**F1**

Putting in fuel-injection pump

Peugeot 505D, 505/604 Turbo Diesel







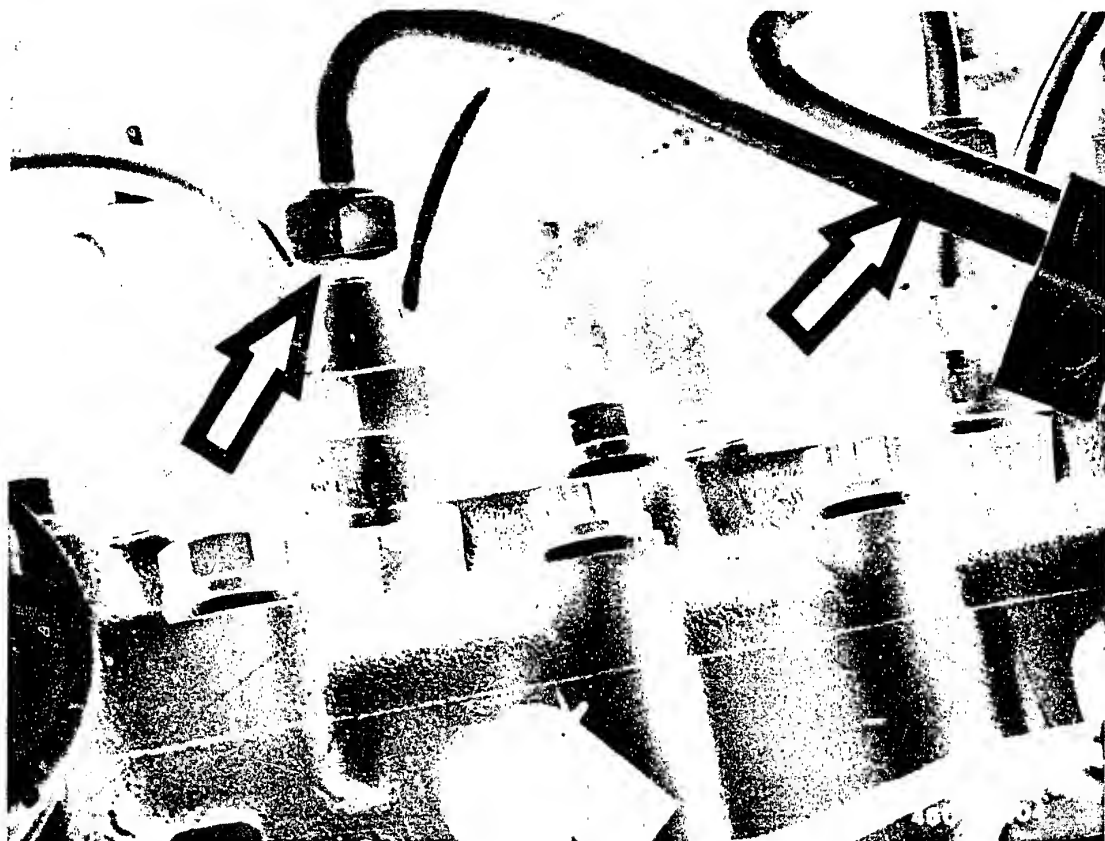
26.1.1 Bleeding the fuel system (XD 3 (T) - 2.5 l engine)

Release the bleeder screw (1) and operate the handpump (2) until the fuel coming out at the bleeder screw (1) is free of bubbles.

Retighten the bleeder screw (1).

Continue working the handpump (2) until resistance is felt.





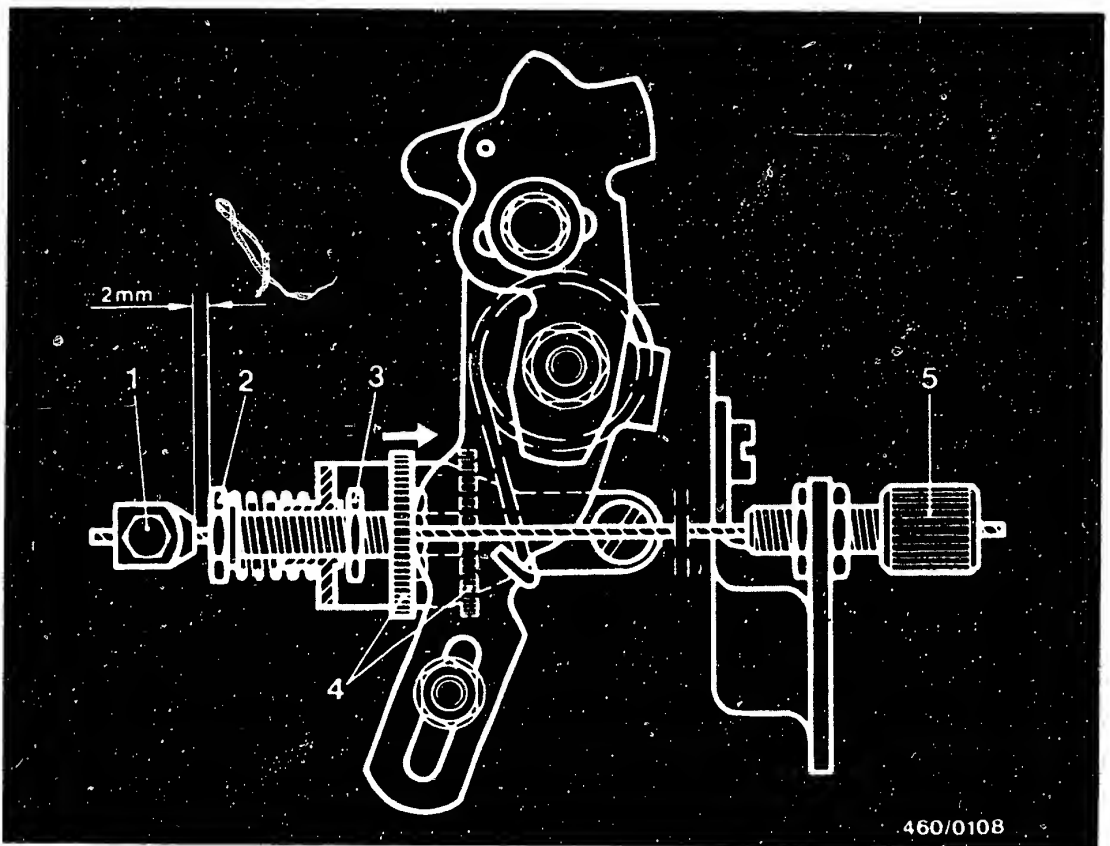
Release the fuel delivery line union nuts at the fuel-injection nozzle holder assemblies.

Operate the engine starting motor without preheating until fuel comes out at the fuel-injection nozzle holder assembly union nuts.

Tighten the union nuts.

Operate the starting motor until the engine starts.





## 26.2 Adjusting idle increase

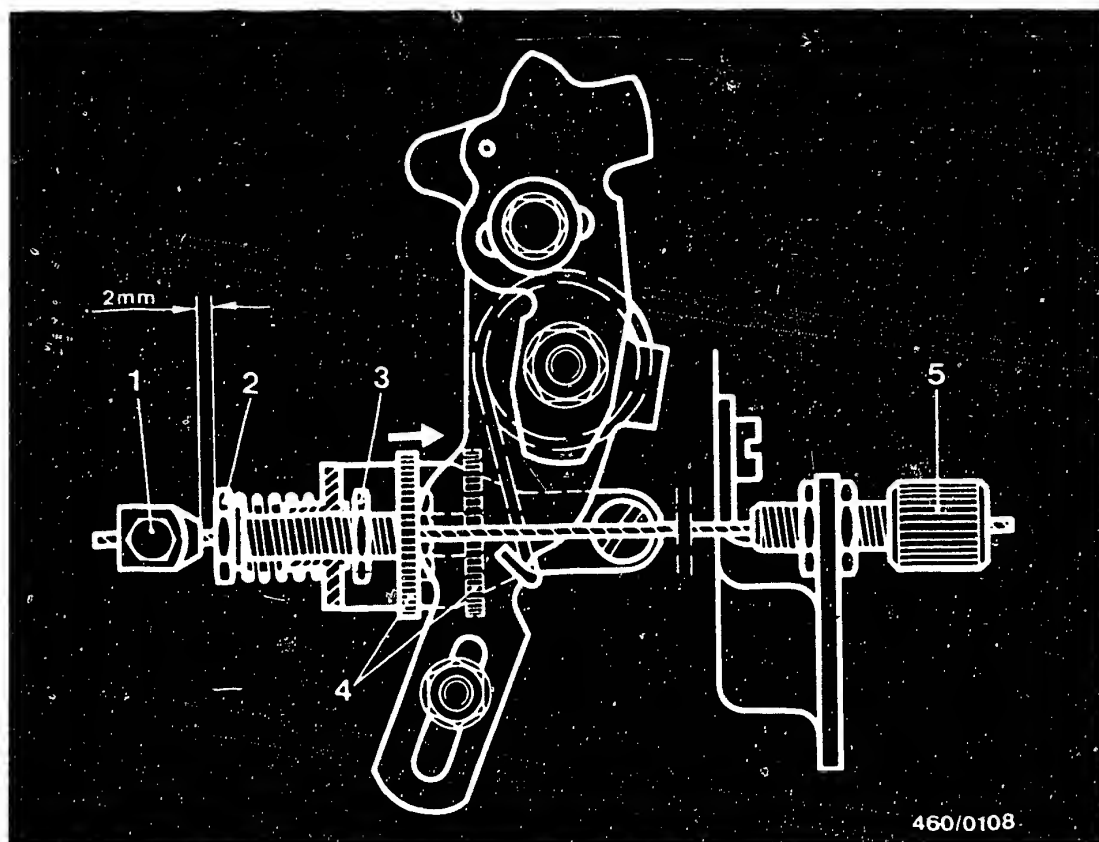
When the idle increase is switched off, there must be a 2 mm gap between the clamping piece (1) and the hex nut (2).

Make corrections by moving clamping piece (1).

Start the engine and warm it up until the cooling fan starts.

Turn the idle increase on.

The engine speed must be 1250 ... 1300 min<sup>-1</sup>.



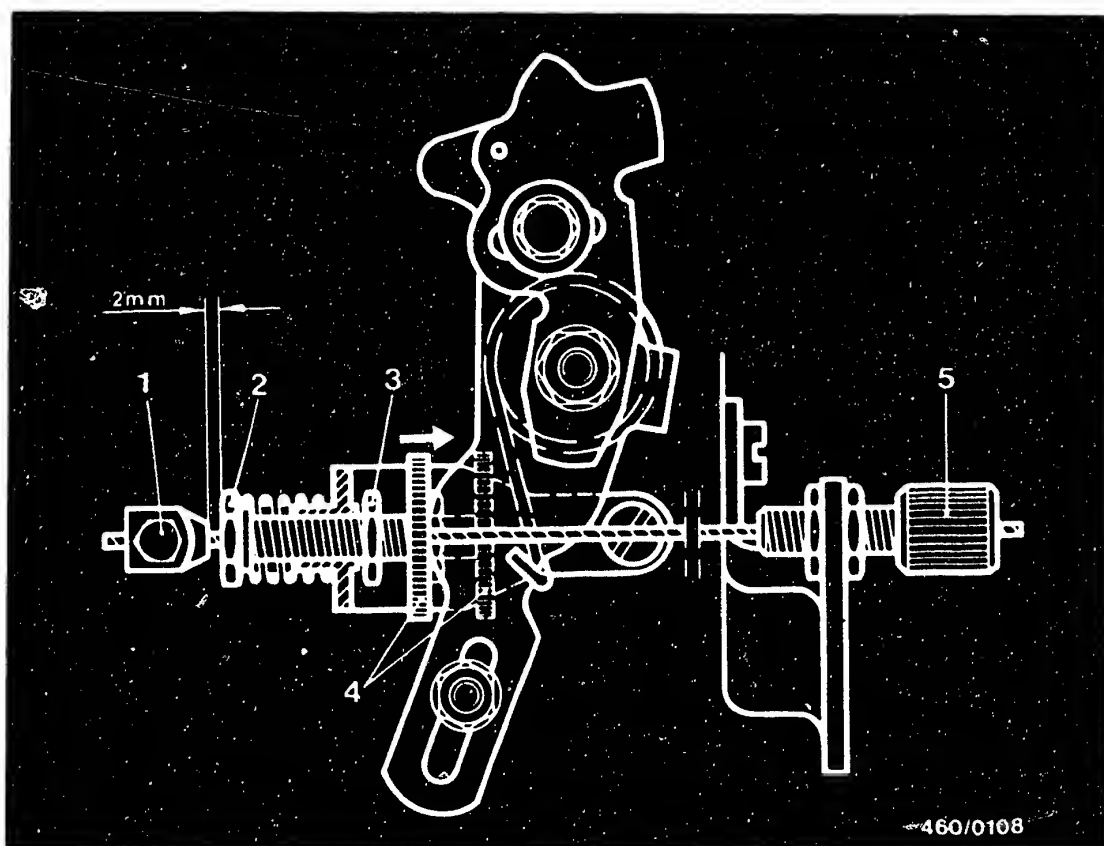
If correction is required, release the locking nut (3).

Hold the hex nut (2) with a wrench, and adjust the knurled screw (4) until the correct speed ( $1250 \dots 1300 \text{ min}^{-1}$ ) is attained.

Tighten the locking nut (3). In so doing hold the knurled screw (4) with a wrench.

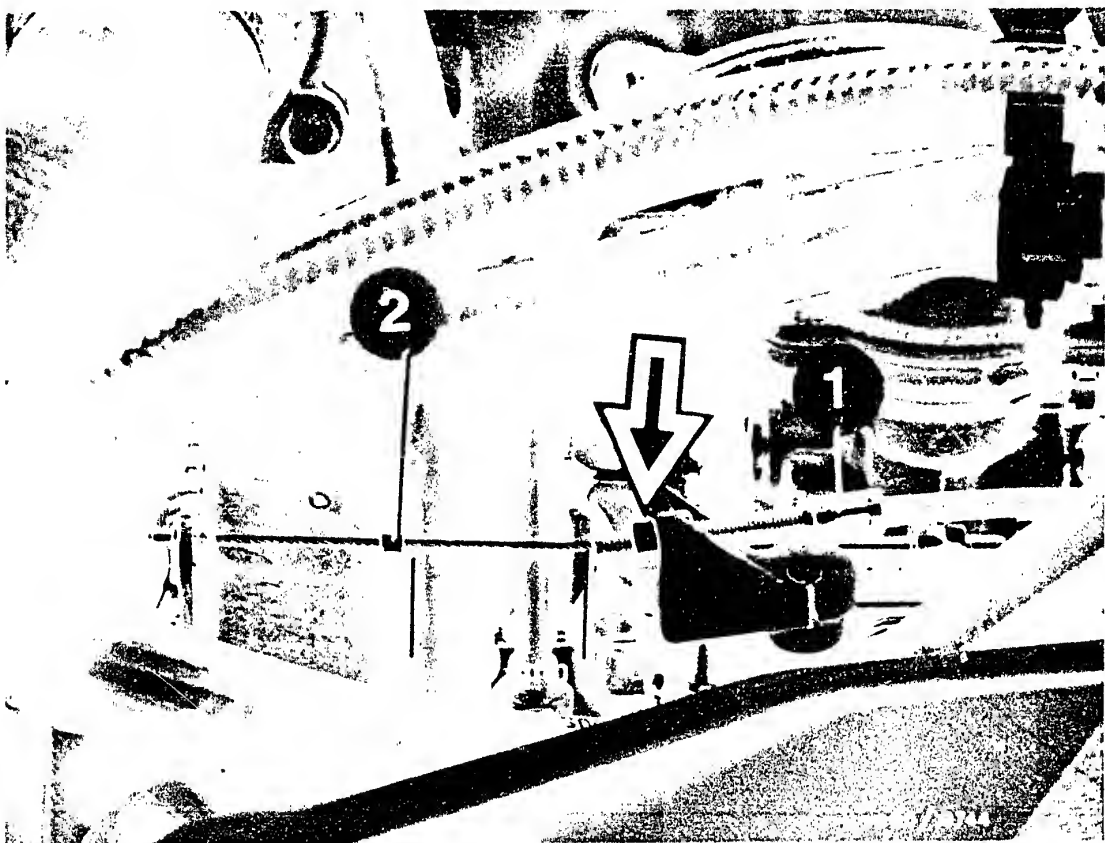
Switch off the idle increase.

Release the locking nut for the knurled screw (5). Move the knurled screw (5) against the cable sleeve and tighten the locking nut.



Check the 2 mm gap between the clamping screw (1) and the hex nut (2).

If need be, correct the gap by moving the clamping piece (1).



### 26.3 Kick-down adjustment (XD 3 T - 2.5 l engine)

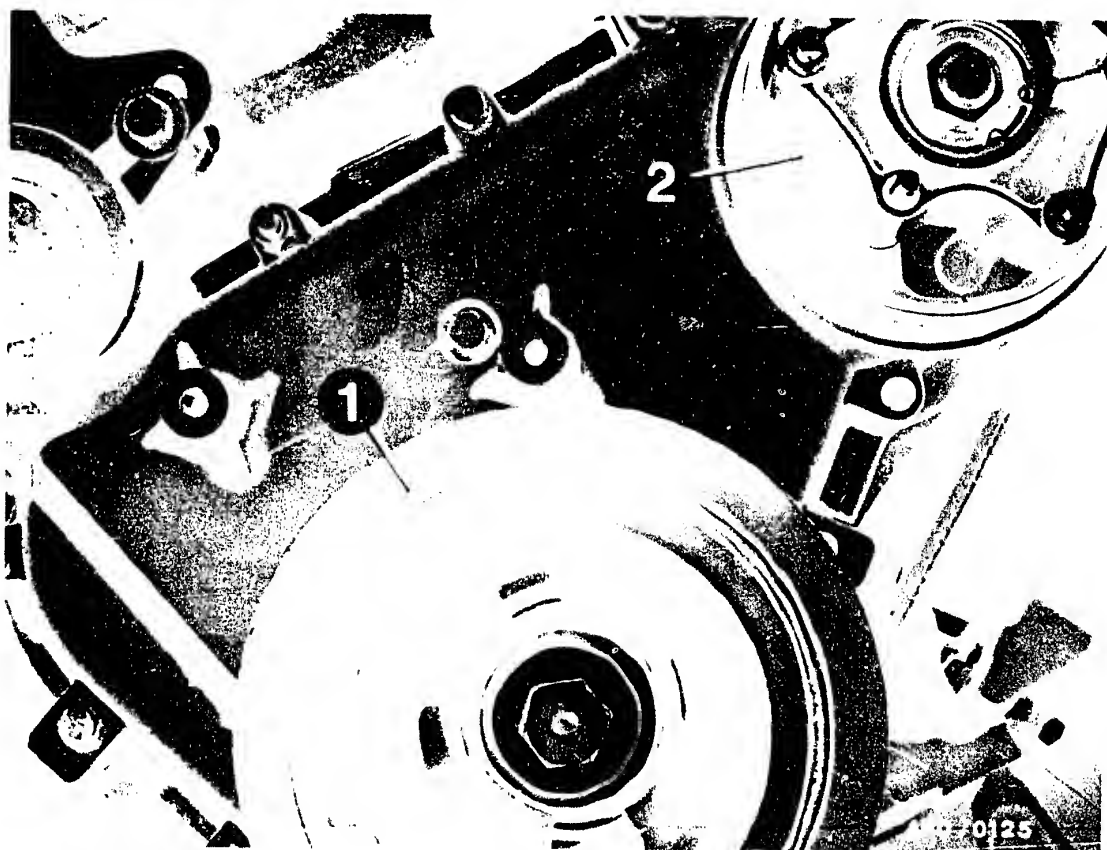
Precondition:

- Engine at normal operating temperature, cooling water temperature + 80° C.

Adjustment:

- Press down on accelerator pedal to the kick-down point.
- Release the locking nuts (arrow) and adjust the guide sleeve (1) to the distance of 39 mm from the cable clamp (2).
- Tighten the locking nuts and recheck the setting.





## 27. Checking and adjusting engine timing

### 27.1 Checking engine timing

Take out the fan funnel and fan.

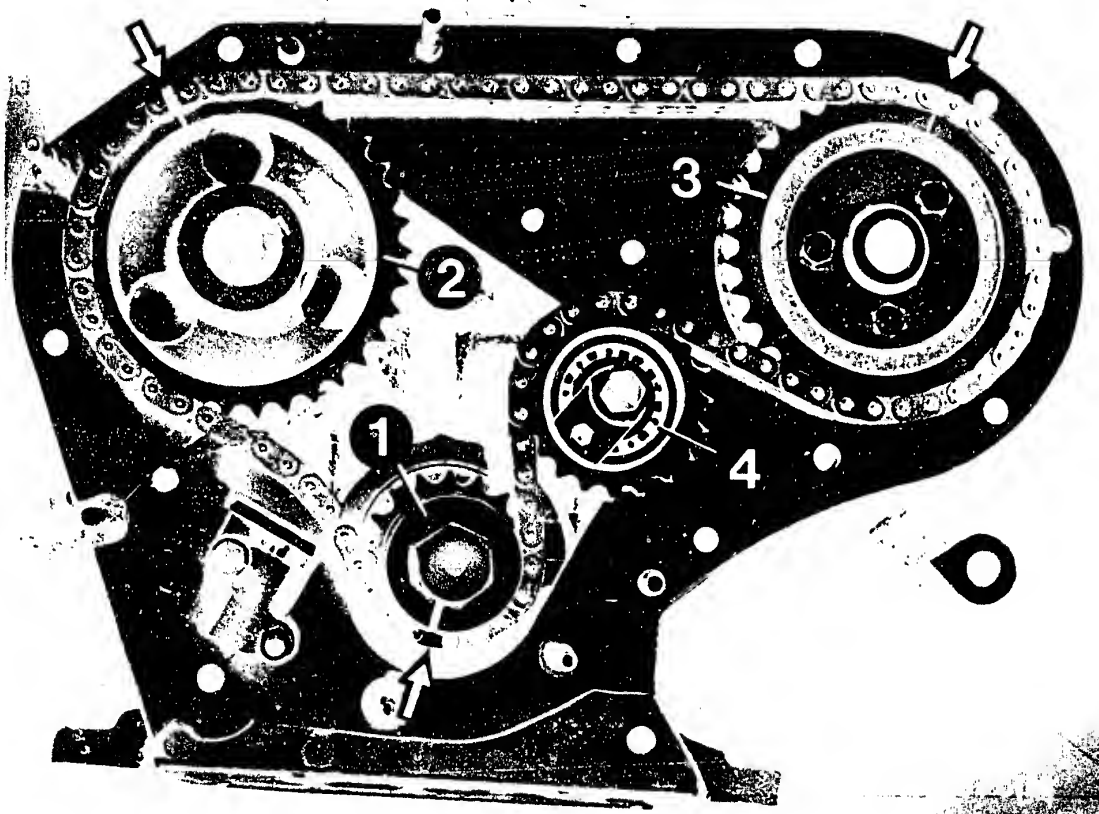
Take off the crankshaft wheel (1) and the fan wheel (2).

Remove the V-belt for the fan wheel and the crankshaft wheel.

Take off the cover for the timing chain.

Screw the fastening screw for the crankshaft wheel into the crankshaft gear.





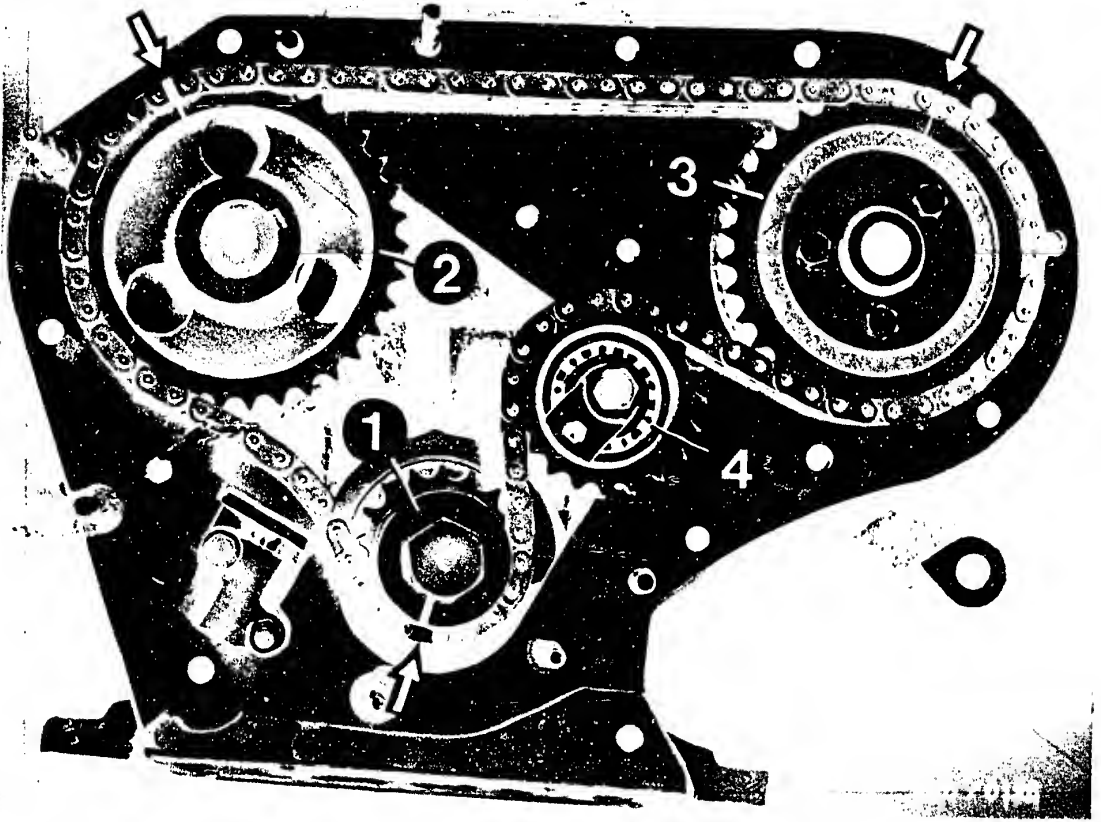
Turn the engine crankshaft in the direction of engine rotation using the crankshaft gear (1) until the markings below line up:

- The marking on the crankshaft gear (1) and the copper link in the chain (arrow).
- Lines on the camshaft gear (2) and chain (arrow).
- Lines on the fuel-injection pump drive gear (3) and chain (arrow).

If the markings do not line up, adjust the engine timing.







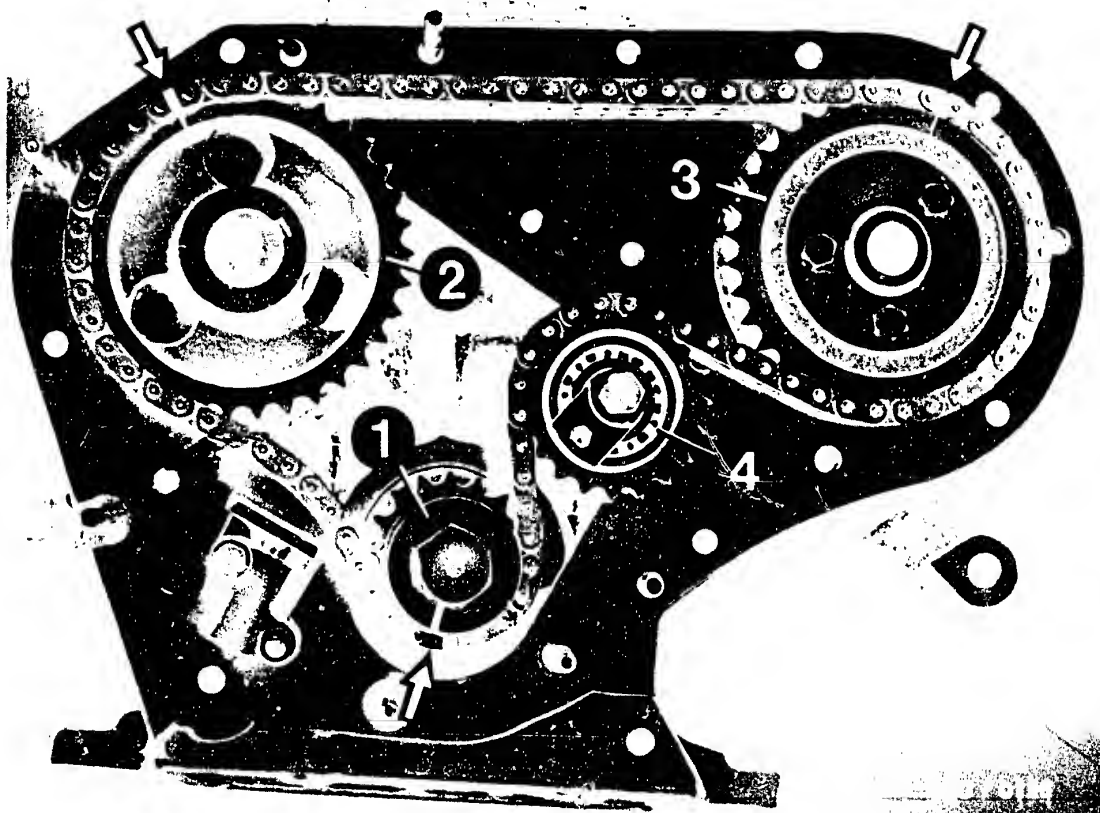
If the markings line up, remove the hex screw from the crankshaft gear (1).

Put on the cover for the timing chain.

Put in the crankshaft gear, the fan gear, and the V-belt.

Fasten the fan, and put in the fan funnel.





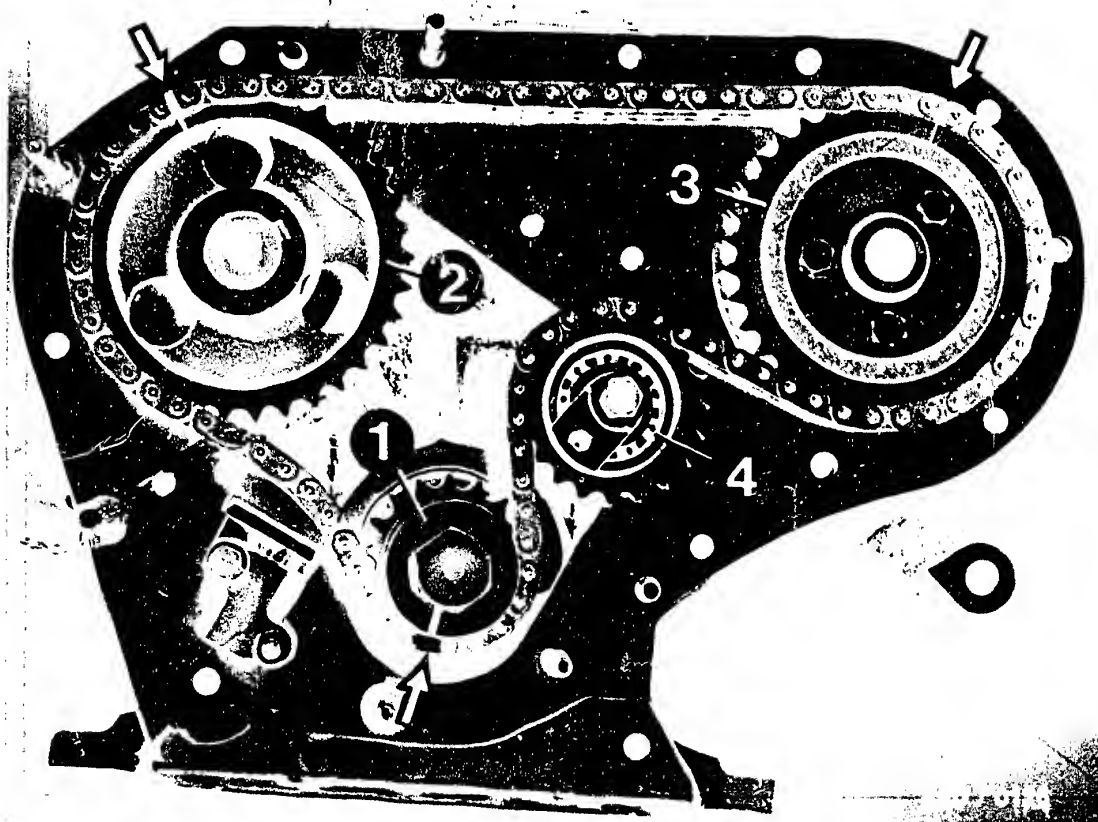
## 27.2 Adjusting engine timing

Using a 3-mm hex-socket wrench, release the chain tensioner. To do this, remove the plug.

Release the fastening screw for the intermediate gear (4) and swing the eccentric to the right until the timing chain has been released.

Take off the timing chain.

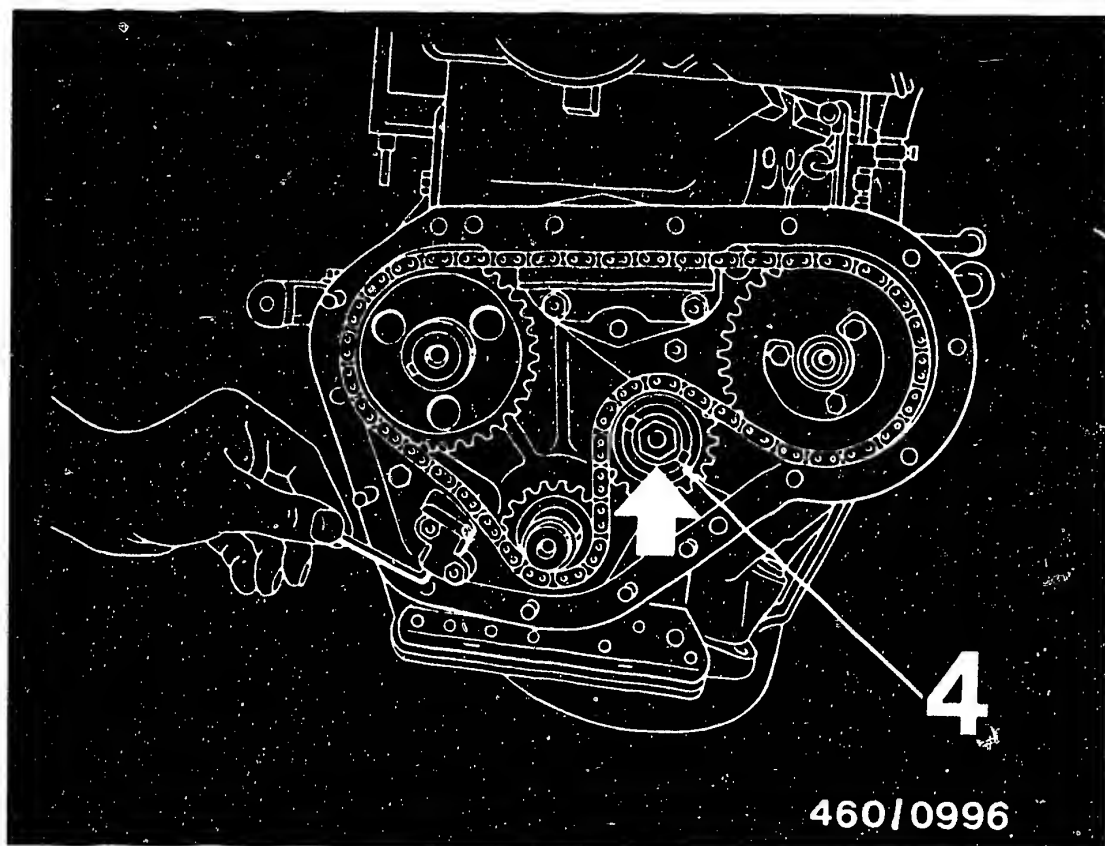
Bring the crankshaft gear (1), the camshaft gear (2), and the fuel-injection pump gear (3) into position with the markings (arrows, see the Figure).



Set the timing chain on the crankshaft gear (1) in such a way that the copper link is located at the prick-punch marking (arrow).

When laying the timing chain on the other gear wheels, make certain that the line marking on the timing chain and that on the gear line up (arrows).



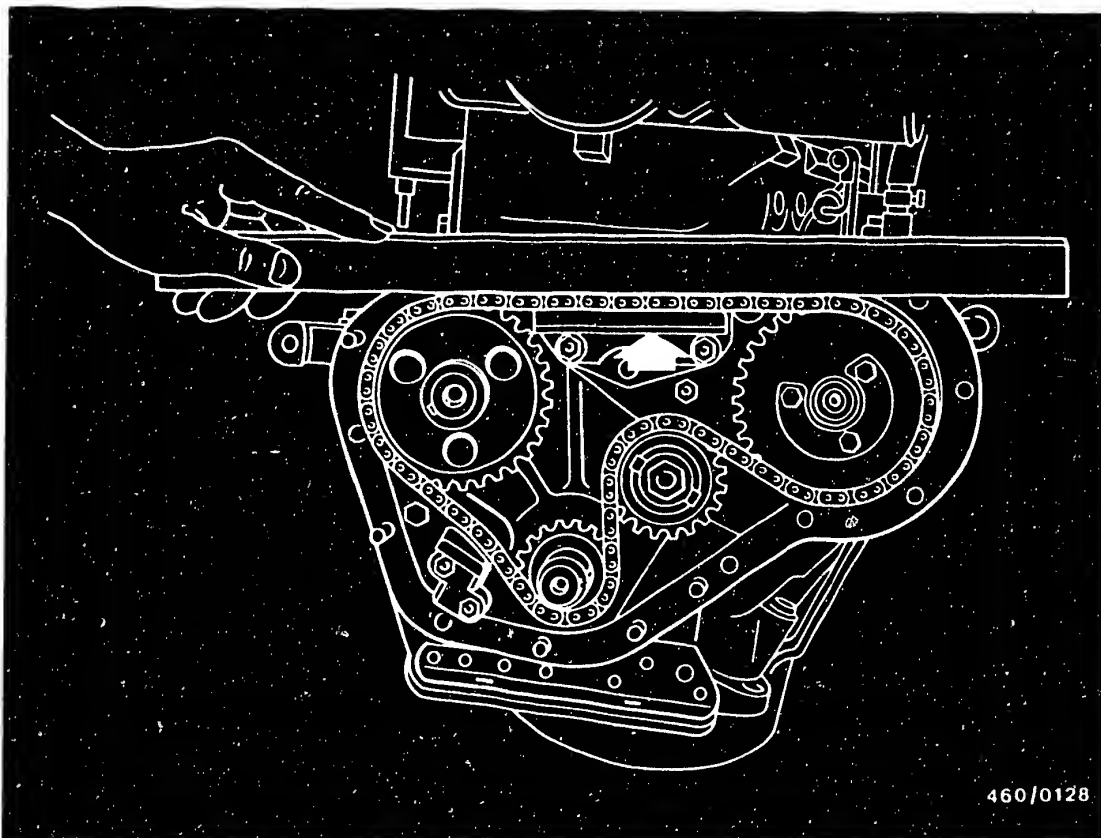


Swing the intermediate gear (4) to the left counter to the direction of engine rotation until a gap of 1.0 ... 2.0 mm is obtained between the guide shoe for the chain tensioner and its support.

Tighten the fastening screw for the intermediate gear (arrow) to 50 Nm.

Prestress the spring of the chain tensioner using a hex-socket-screw key until the timing chain lies up against the guide shoe with no clearance.

Put the screw plug into the chain tensioner.



Lay a straightedge across the camshaft gear and the pump gear.

Put the guide shoe (arrow) against the timing chain and tighten the fastening screws.

If the hex screw is still there, remove it from the crankshaft gear.

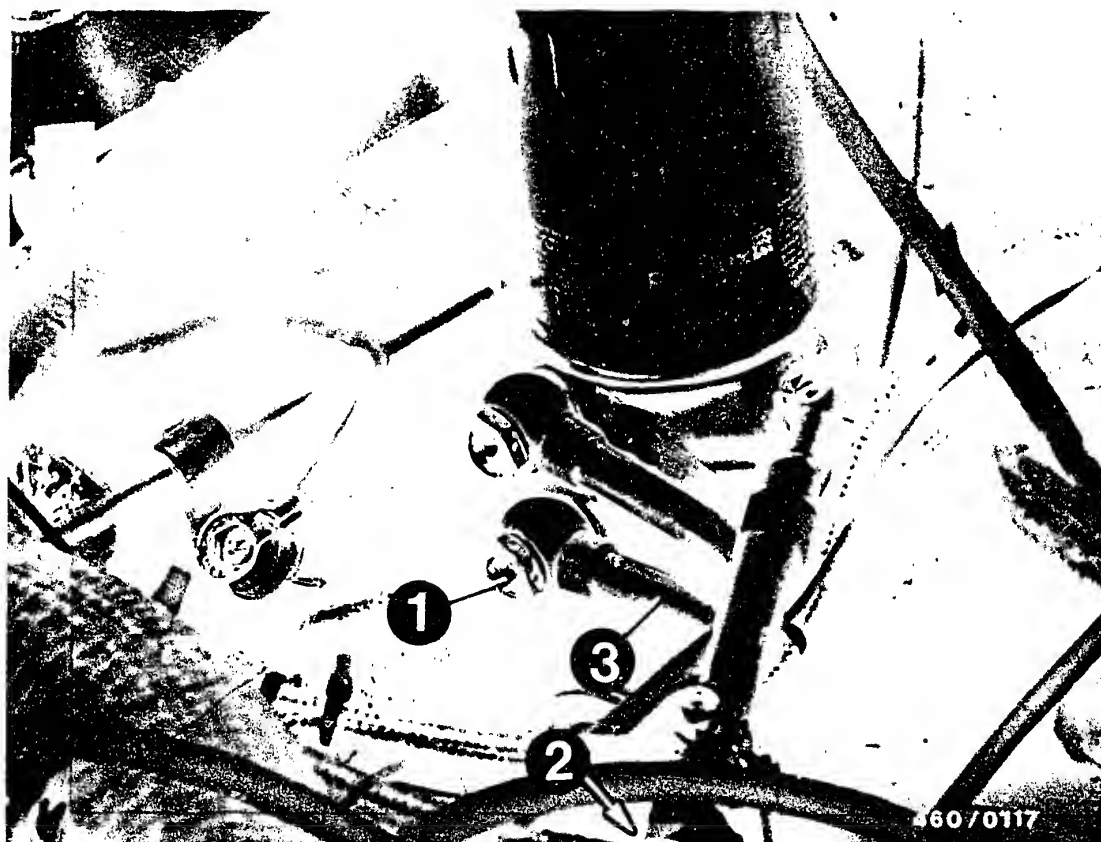
Put on the cover for the timing chain.

Put in the crankshaft gear, the fan gear, and the V-belt.

Note:

More recent models of the engine have no guide shoe (arrow).



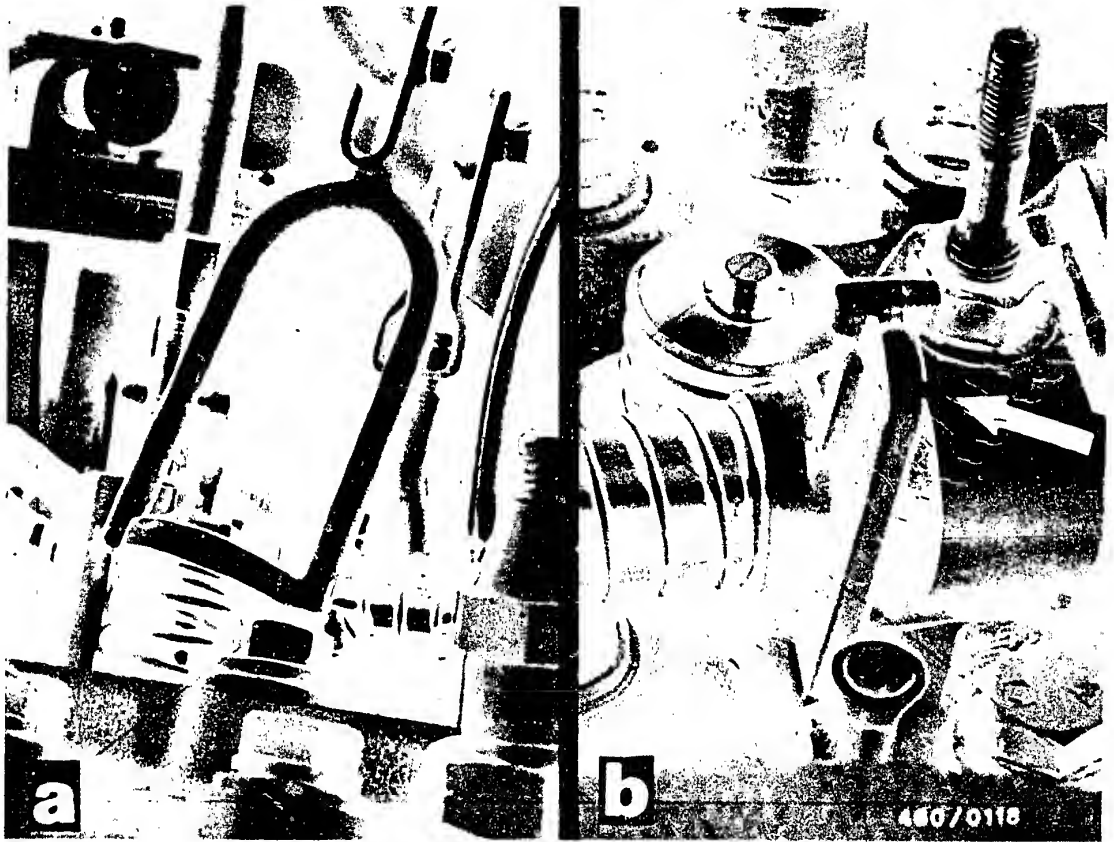


Remove the cylinder head cover.

Unscrew the lower fastening screws (1) on the oil filter and the screw (2) on the oil cooler.

Lay the line (3) to the side.





Using a box wrench, turn the crankshaft in such a way that the exhaust of the 1st cylinder just opens with the piston at BDC.

Insert tool 8.0105 Y into the rocker arm shaft and press the spring of the 4th cylinder exhaust valve down (Figure, a).

In so doing, shove the rocker arm against the pressure spring on the rocker arm shaft and set it up in a vertical position. In that position, move the rocker arm to its initial location (Figure, b).



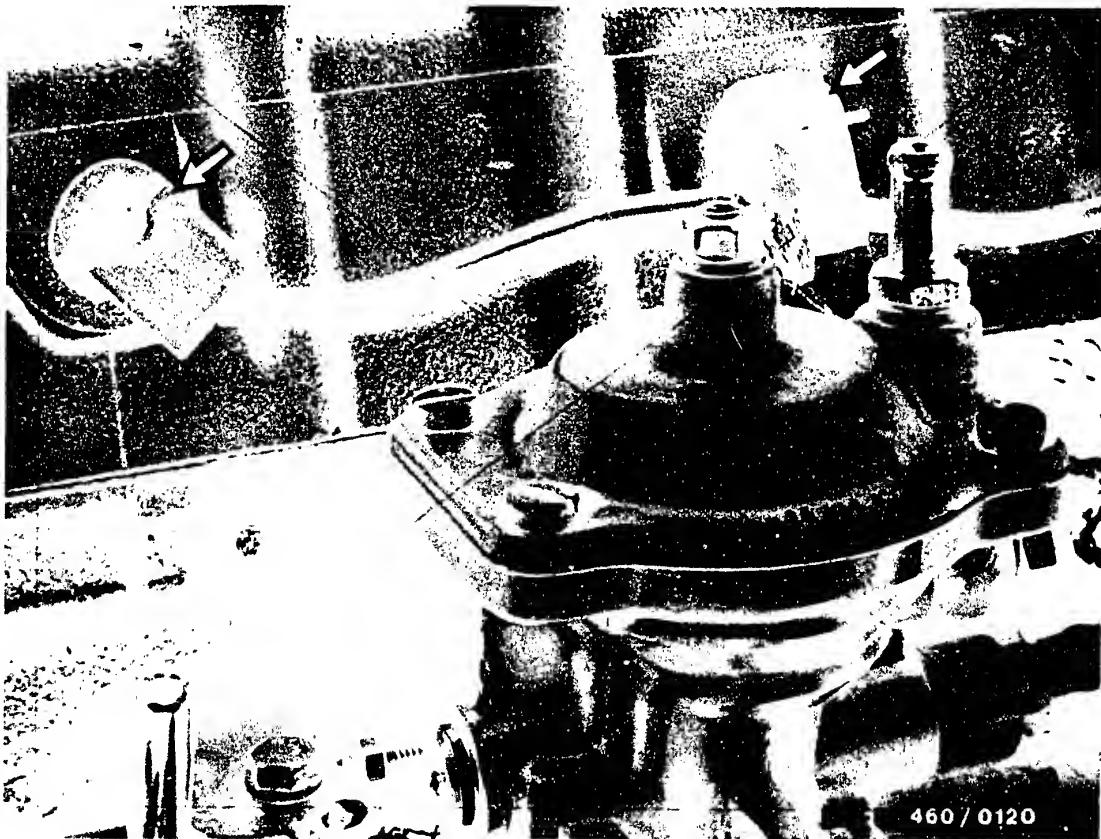
Turn the crankshaft in the direction of engine rotation until the 4th cylinder is at TDC.

When this is done, the valves of the 1st cylinder are at overlap.

Press the valve spring of the 4th cylinder exhaust valve down using tool 8.0105 Y.  
Remove the valve collets (1) from the exhaust valve.

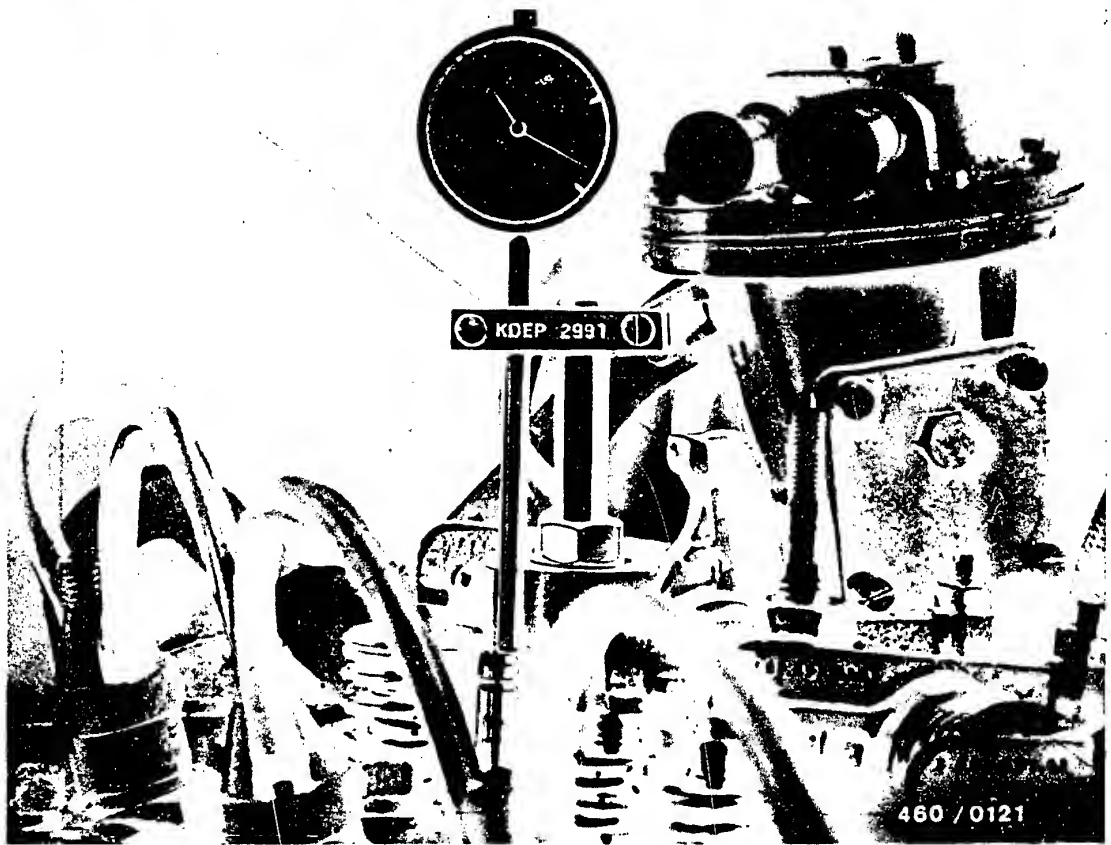
Relax the valve spring, take the valve plate (2) and the valve spring (3) off the valve stem.





The 4th cylinder exhaust valve now lies on the engine piston.

Take out the sheathed-element glow plugs for the 3rd and 4th cylinders (arrows).



Screw the measuring tool KDEP 2991 on the threaded bolt of the 4th cylinder.

Clamp dial indicator 1 687 233 012 with the long measuring base into measuring tool KDEP 2991.

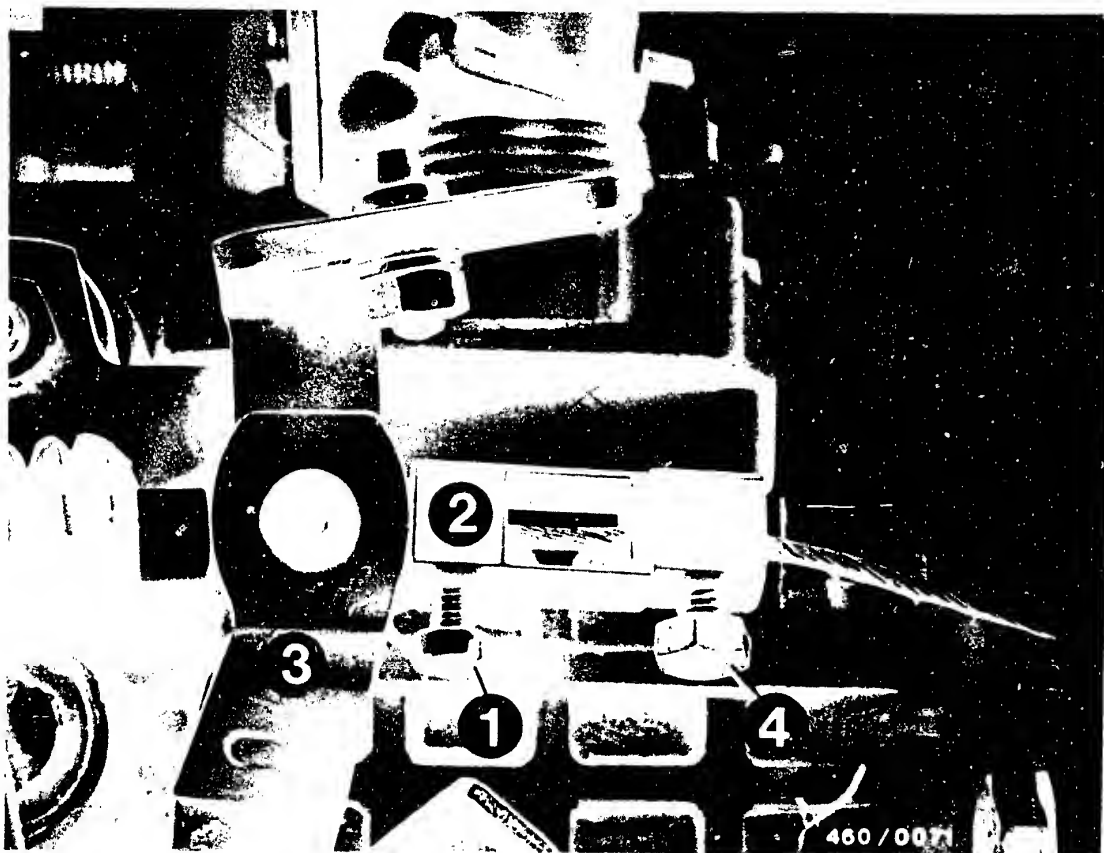
The measuring base lies on the 4th cylinder exhaust valve.

Prestress the dial indicator approx. 10 mm.

Turn the crankshaft counter to the direction of engine rotation until the plunger has made a stroke of approx. 7 mm.

Turn the crankshaft back in the direction of engine rotation to the TDC position of the 4th cylinder. Set the dial indicator at "0".





XD 3 T - 2.5 l engine only

To test and adjust the start of fuel delivery, the temperature-controlled cold-start accelerator (KSB) must be in its zero position.

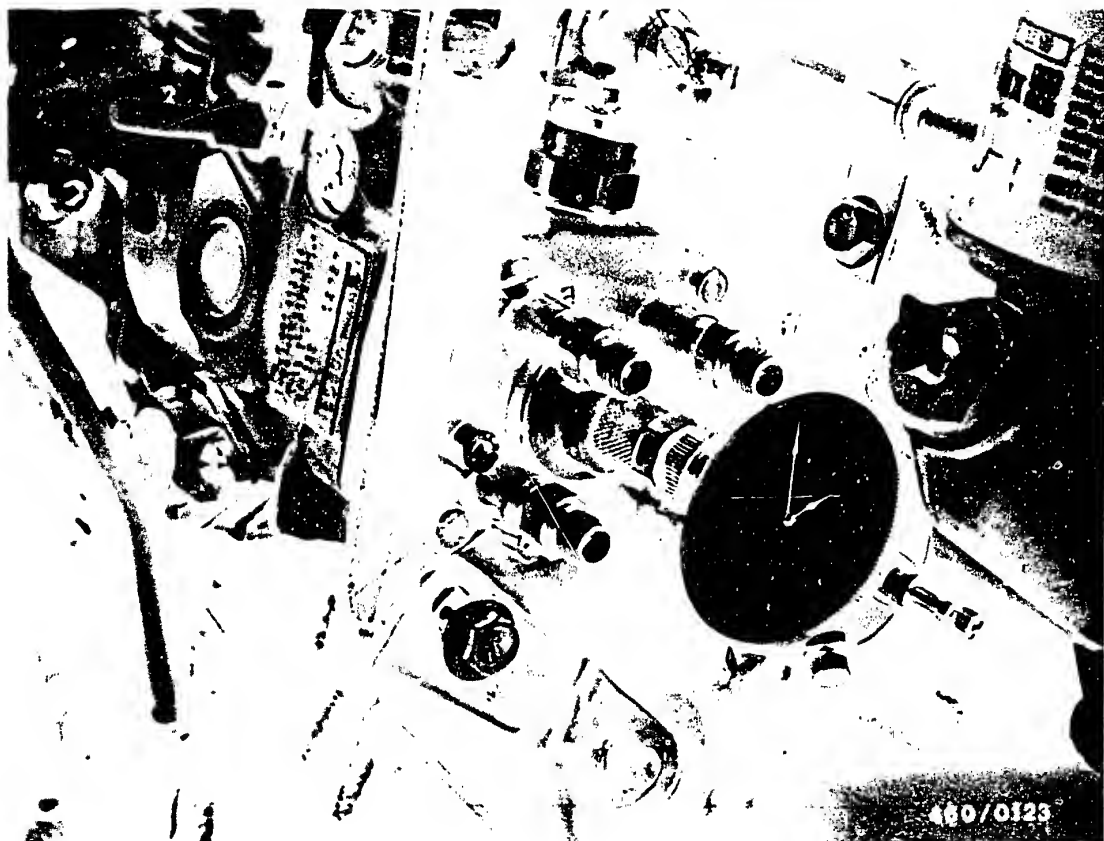
For this, release the clamping screw (1) on the fuel-injection pump. Pull the spacer piece (2) and the control lever (3) toward the hydraulic head.

Turn the spacer piece (2) by 90° and shove it back toward the drive shaft until the control lever (3) touches up against the stop bracket. In this position, the control device is switched off.

Caution!

Do not release the locking screw (4) or a readjustment of the control device will be necessary.





Remove the fuel-injection lines. (Prevent the delivery valve holders from becoming loose by holding them with a wrench).

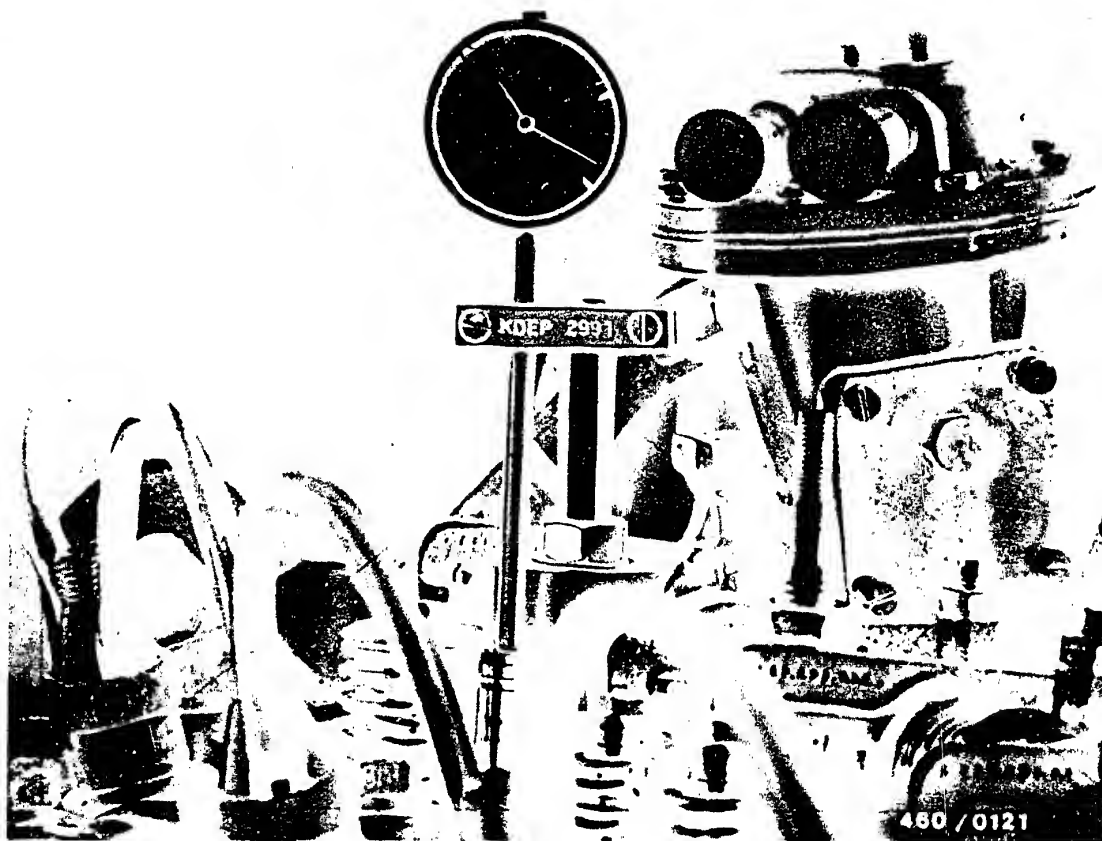
Remove the bleeder screw from the central screw plug (triangular screw) of the fuel-injection pump.

Screw measuring tool KDEP 1085 into the hole for the bleeder screw.

Put on dial indicator 1 687 233 011 or .. 012 with the measuring base, and prestress it approx. 3 mm.

Turn the crankshaft counter to the direction of engine rotation until the dial indicator indicates the BDC of the fuel-injection pump plunger. Set the dial indicator at "0".

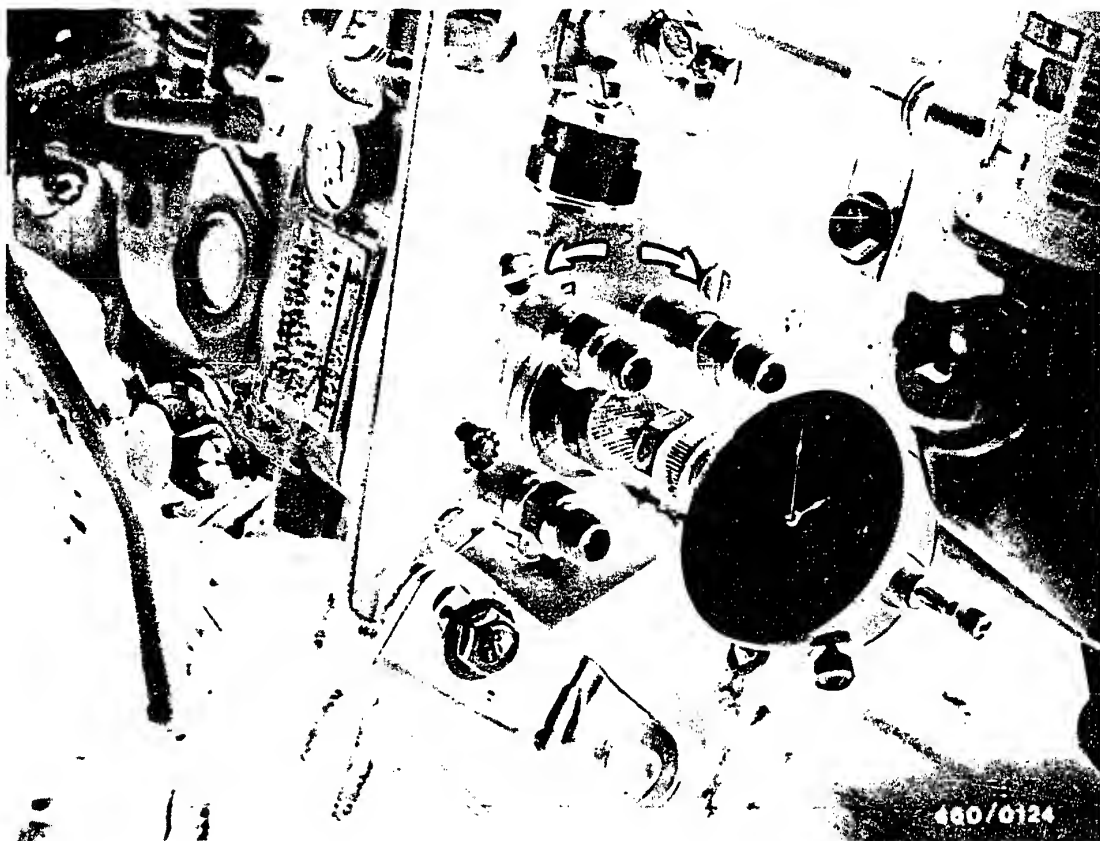




Turn the crankshaft in the direction of engine rotation until the dial indicator on the 4th cylinder exhaust valve indicates a piston stroke of

505D XD3 2.5 l engine	0.72 mm
505/604 D-Turbo XD2S 2.3 l engine	0.80 mm
505/604 D-Turbo XD3T 2.5 l engine	0.89 mm
BTDC.	



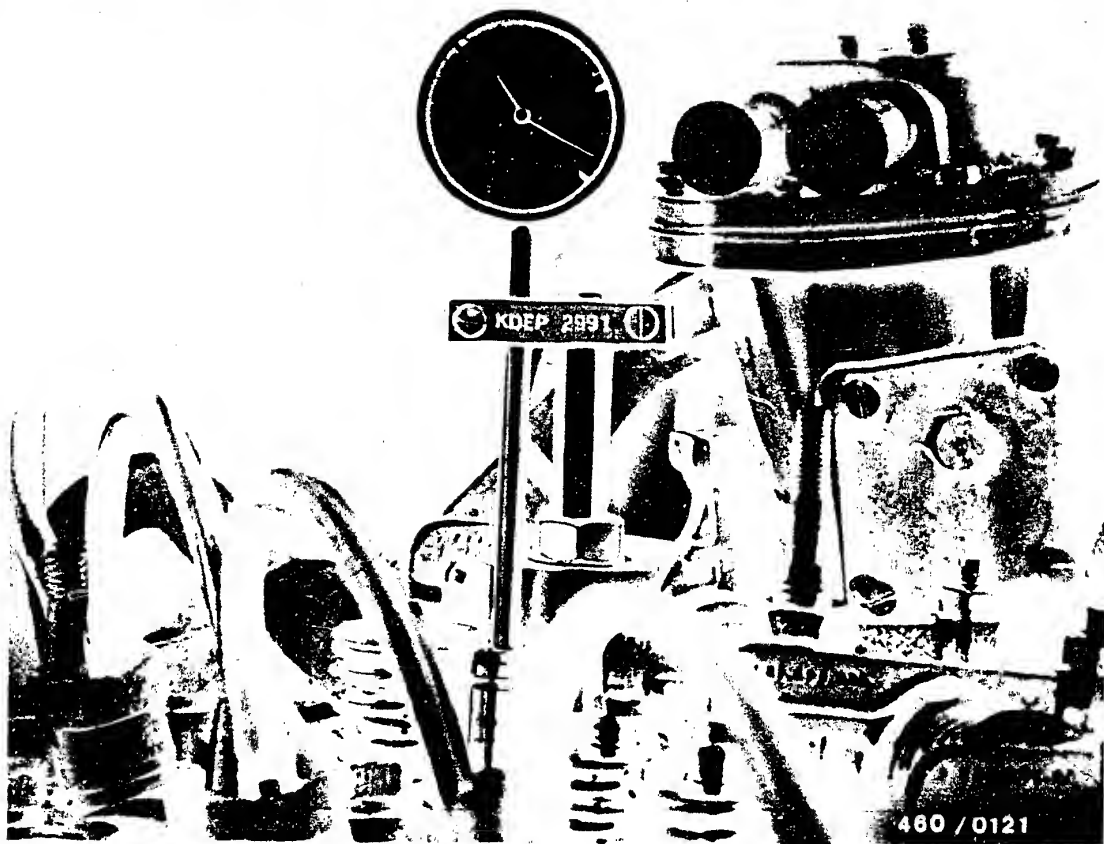


At the piston settings indicated, the dial indicator on the fuel-injection pump must show a pump plunger stroke of 0.28 ... 0.32 mm ABDC.

If necessary, adjust the stroke by pivoting the fuel-injection pump. To do this, the fastening screws on the fuel-injection pump (also on the support bracket) must be released.

Then retighten the fastening screws to 20 Nm.





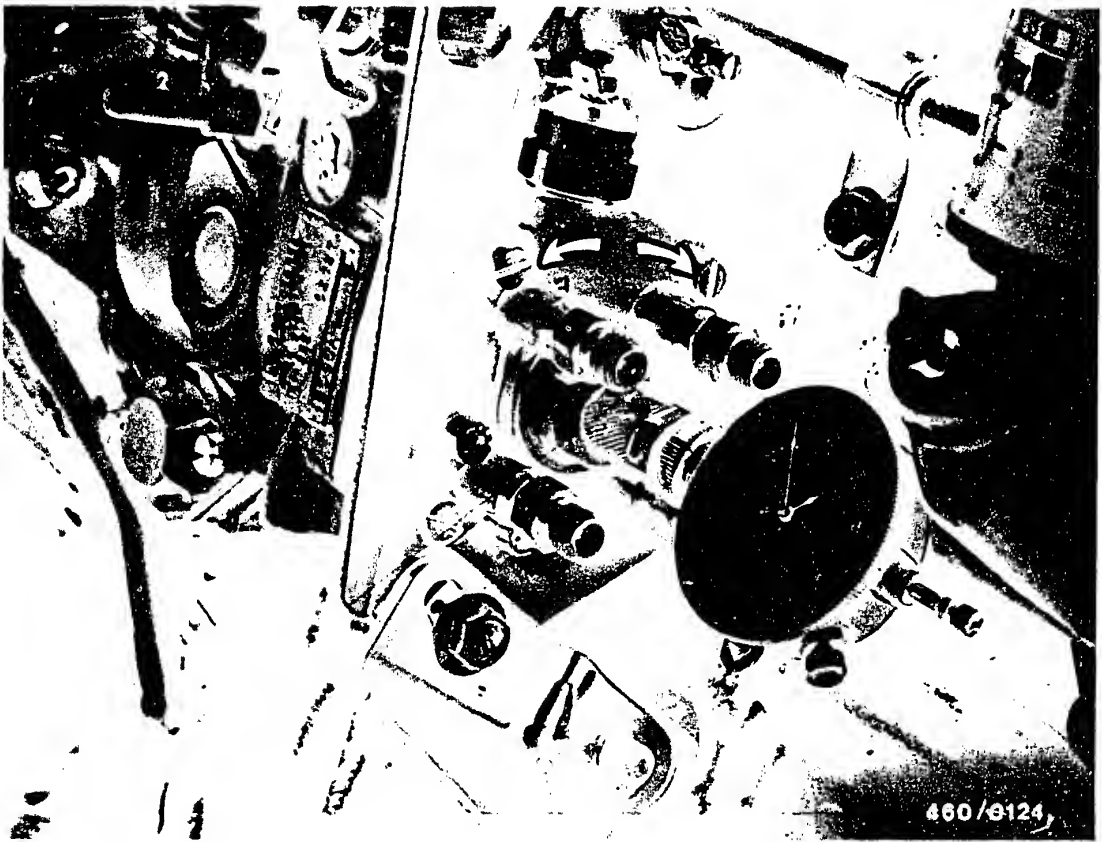
Checking adjustment of the fuel-injection pump to the engine

Turn the engine crankshaft in the direction of engine rotation as far as the TDC position for the 4th cylinder.

Check the 0 position of the dial gauge on the indicator exhaust valve.

Turn the crankshaft counter to the direction of engine rotation until the dial indicator shows the stroke of approx. 7 mm (7 turns of the needle).





Turn the crankshaft in the direction of engine rotation until the dial indicator on the fuel-injection pump indicates a stroke of 0.30 mm.

In this position, the piston of the 4th cylinder must stand

505D

XD3 2.5 l engine

0.69...0.75 mm

505/604 D-Turbo

XD2S 2.3 l engine

0.77...0.83 mm

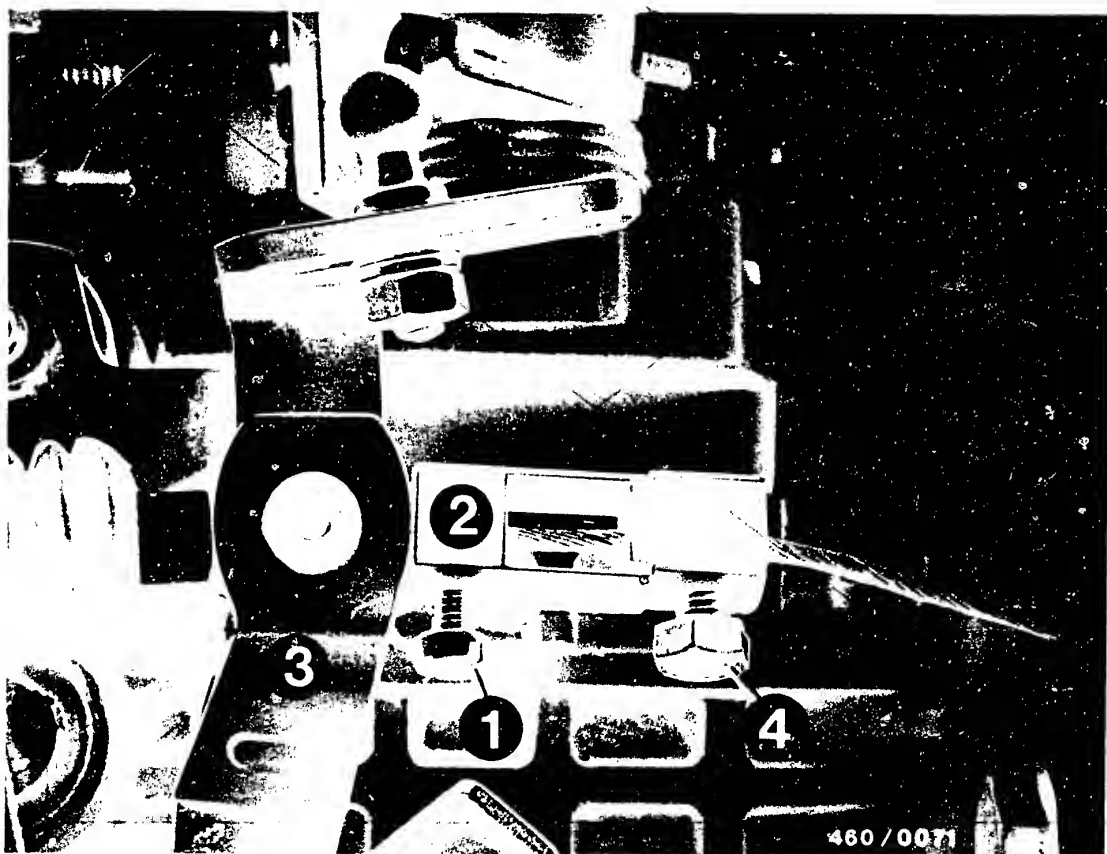
505/604 D-Turbo

XD3T 2.5 l engine

0.86...0.92 mm

BTDC.





### XD 3 T - 2.5 l engine only

Pull the control lever (3) and the spacer piece (2) toward the hydraulic head.

Turn the spacer piece (2) by 90° and shove it back toward the drive shaft.

The spacer piece is in its initial position.

Tighten the clamping screw (1).

### Caution:

Do not release the locking screw (4) or a readjustment of the control device will be necessary.



Remove measuring tool KDEP 1085 and the dial indicator from the fuel-injection pump.

Put on the bleeder screw, using a new copper gasket ring.

Bring the engine piston of the 4th cylinder into the TDC position. Remove measuring tool KDEP 2991 and the dial indicator. Put the valve spring and the upper valve plate on the 4th cylinder exhaust valve.

Using tool 8.0105 Y, press the valve spring down. While so doing, put in the exhaust valve collets. Relax the valve spring.

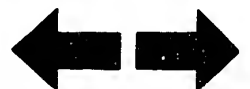
Turn the crankshaft so that the 1st cylinder exhaust valve just opens with the piston at BDC.

Using the spring plate, press the valve spring of the 4th cylinder exhaust valve down.

Shove the rocker arm against the spring of the rocker arm shaft and put it in a horizontal position.

In that position, move the rocker arm on to the exhaust valve and tappet.

Remove tool 8.0105 Y.



## Checking valve clearance

Check valve clearance only with engine cold (min. 6 hrs at rest).

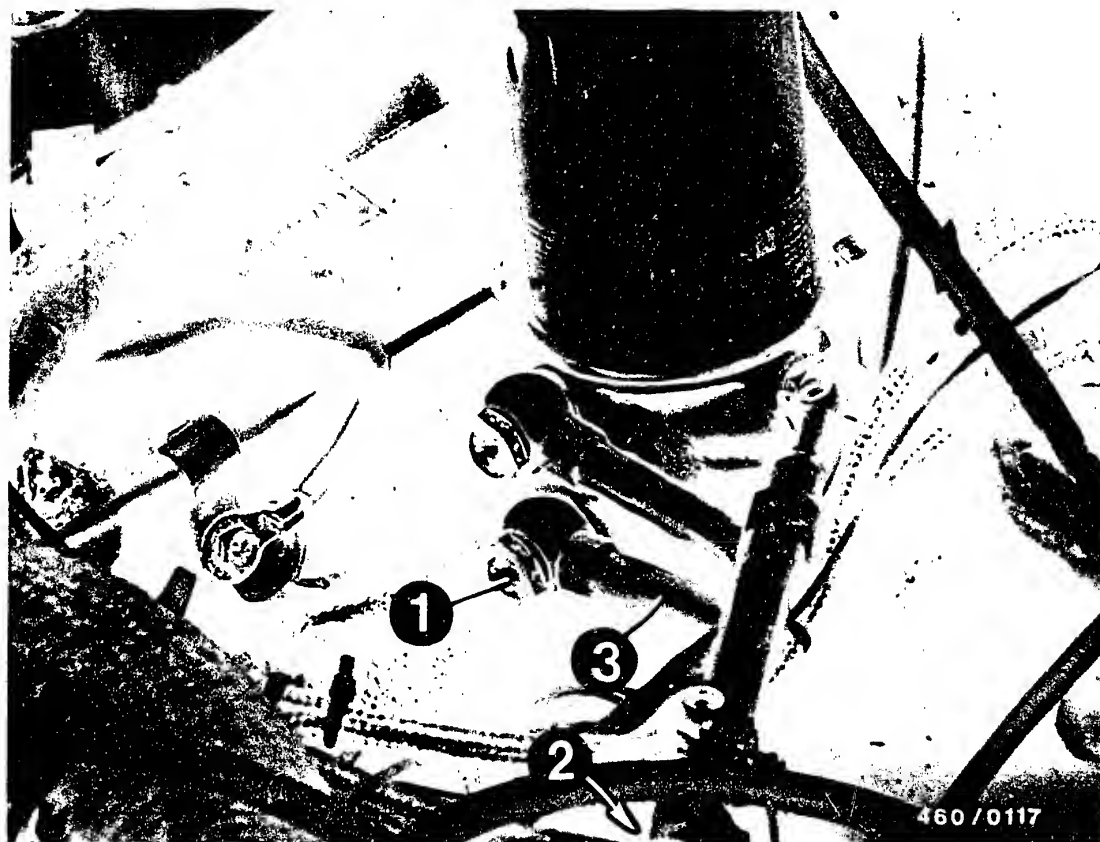
Intake valve: 0.15 mm

Exhaust valve: 0.25 mm

Put on the cylinder head cover, the fan funnel, and the line from the oil cooler to the oil filter.

Put in the sheathed-element glow plugs for the 3rd and 4th cylinders. Put in the fuel-injection lines. (Prevent the delivery valve holders from turning by holding them with a wrench.) If need be, bleed the fuel-injection system.





## 28. Injection timing

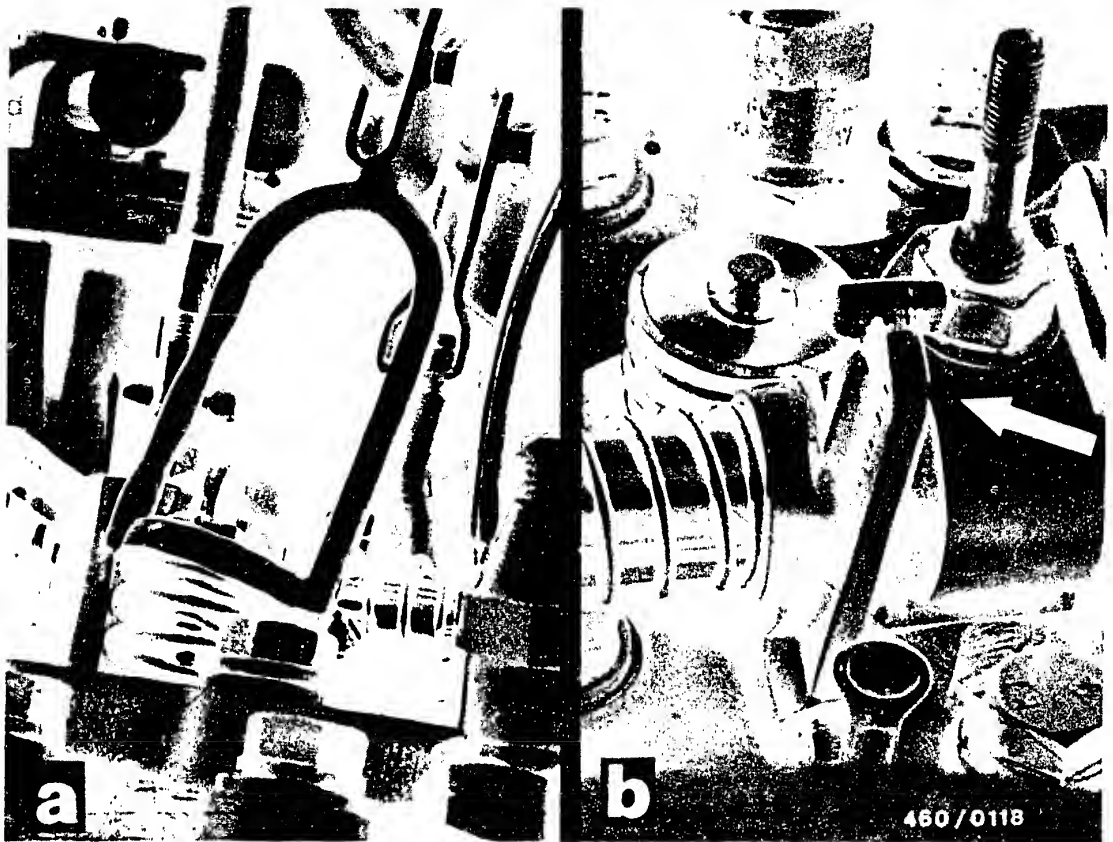
Remove the fan funnel.

Remove the cylinder head cover.

Unscrew the lower fastening screws (1) on the oil filter and the screw (2) on the oil cooler.

Lay the line (3) to the side.

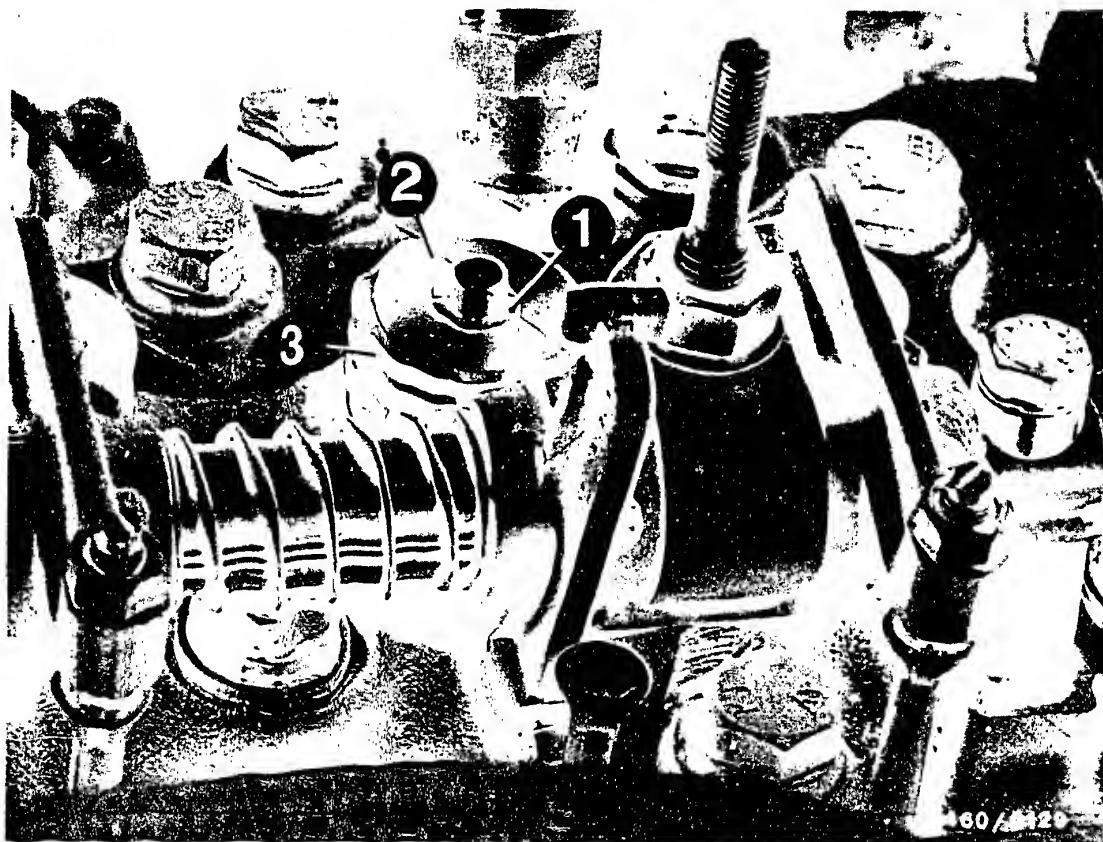




Using a box wrench, turn the crankshaft so that the exhaust of the 1st cylinder just opens with the piston at BDC.

Insert tool 8.0105 Y into the rocker arm shaft and press the spring of the 4th cylinder exhaust valve down (Figure a).

Shove the rocker arm against the pressure spring on the rocker arm shaft and set it up in a vertical position. In that position, move the rocker arm to its initial location (Figure b).



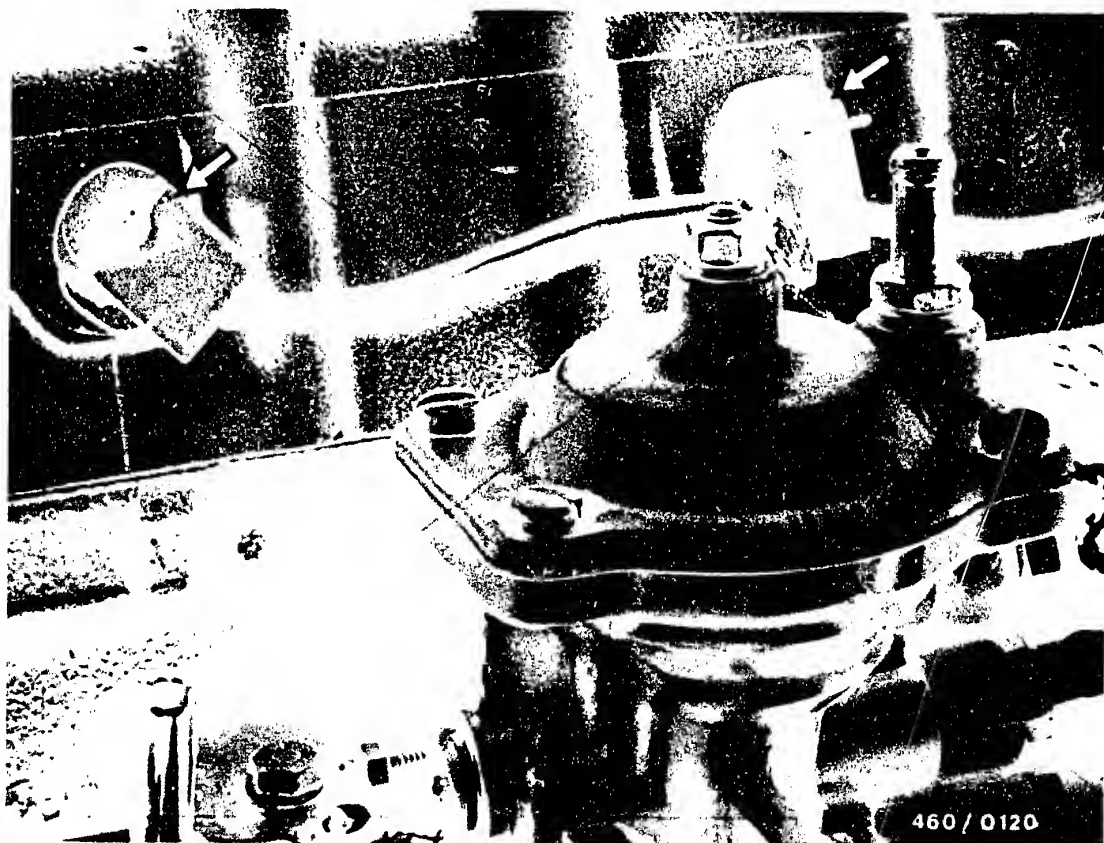
Turn the crankshaft in the direction of engine rotation until the 4th cylinder is at TDC.

The 1st cylinder valves are then at overlap.

Using tool 8.0105 Y, press the valve spring of the 4th cylinder exhaust valve down. Remove the valve collets (1) from the exhaust valve.

Relax the valve spring, take the spring plate (2) and the valve spring (3) off the valve stem.





The 4th cylinder exhaust valve now lies against the engine piston.

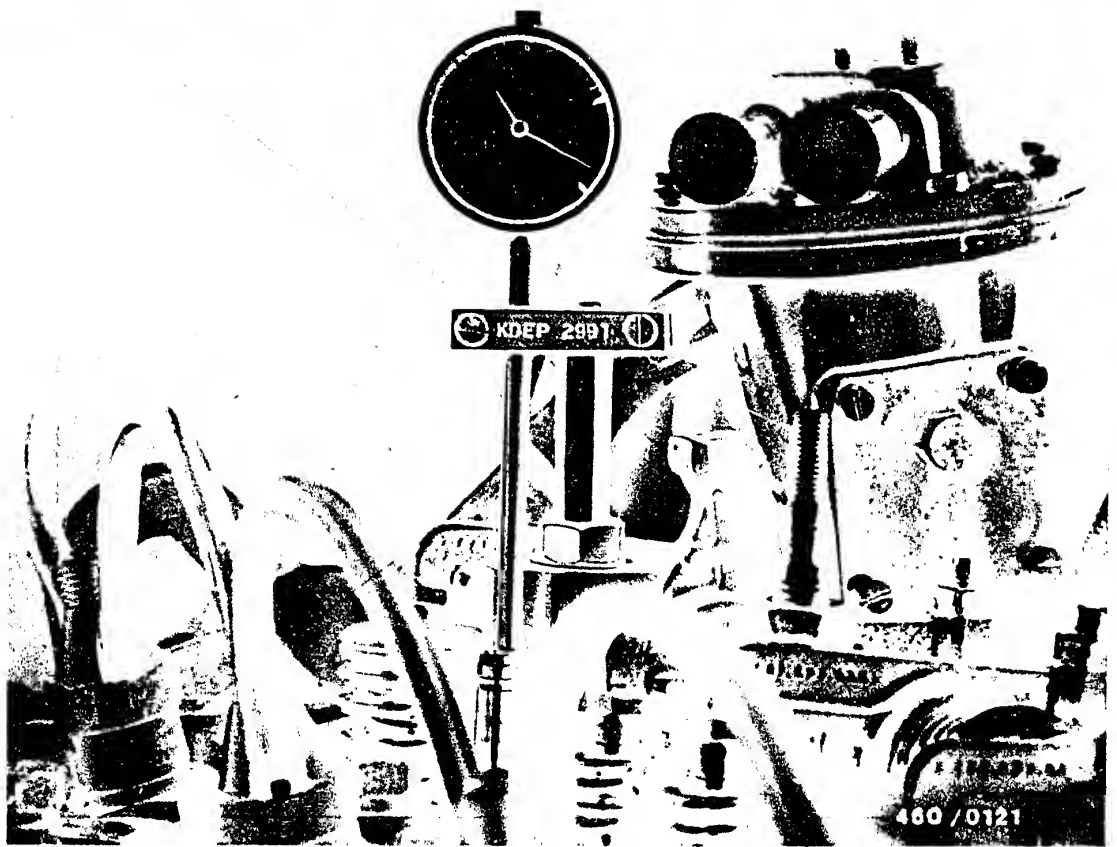
Remove the sheathed-element glow plugs for the 3rd and 4th cylinders (arrows).

**G8**

Injection timing

Peugeot 505D, 505/604 Turbo Diesel





Screw measuring tool KDEP 2991 on the threaded bolt of the 4th cylinder.

Clamp dial indicator 1 687 233 012 with the long measuring base into measuring tool KDEP 2991.

The measuring base lies on the exhaust valve of the 4th cylinder.

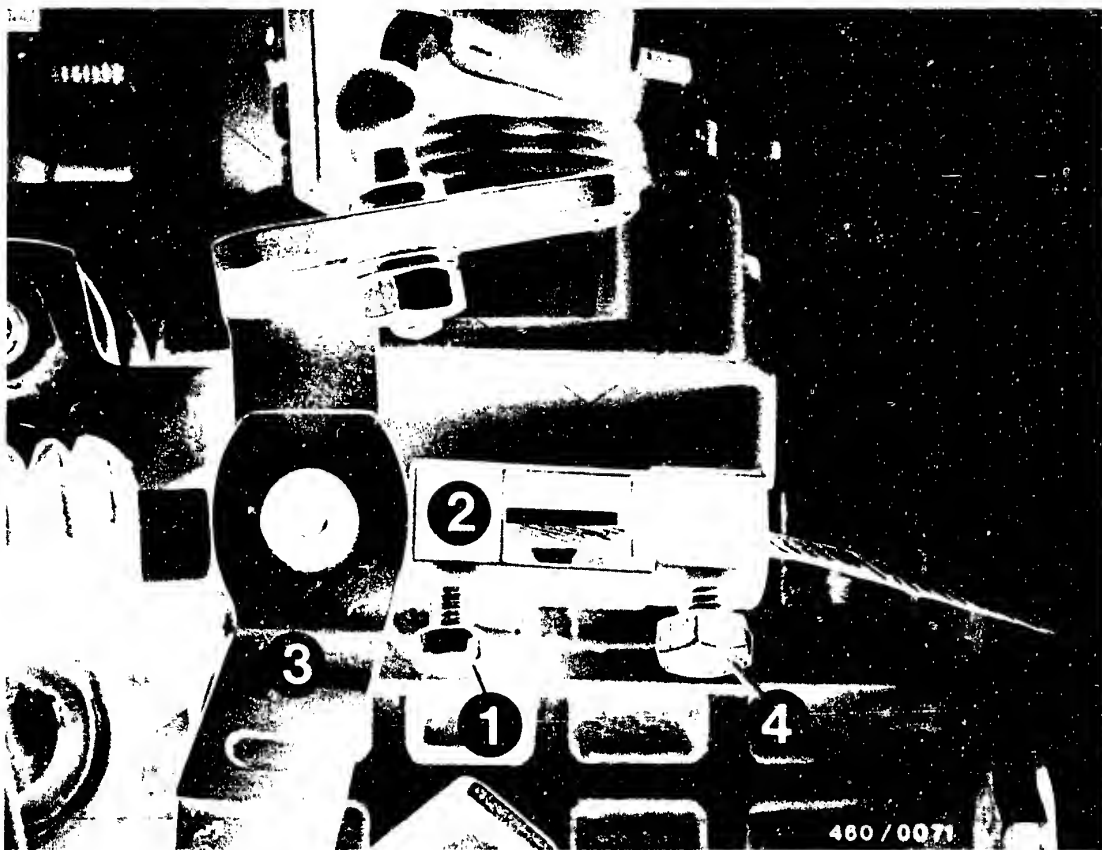
Prestress the dial indicator approx. 10 mm.

Turn the crankshaft counter to the direction of engine rotation until the plunger has made a stroke of approx. 7 mm.

Turn the crankshaft back in the direction of engine rotation to the TDC position of the 4th cylinder. Set the dial indicator at "0".







### XD 3 T - 2.5 l engine only

To test and adjust the start of fuel delivery, the temperature-controlled cold-start accelerator (KSB) must be in its zero position.

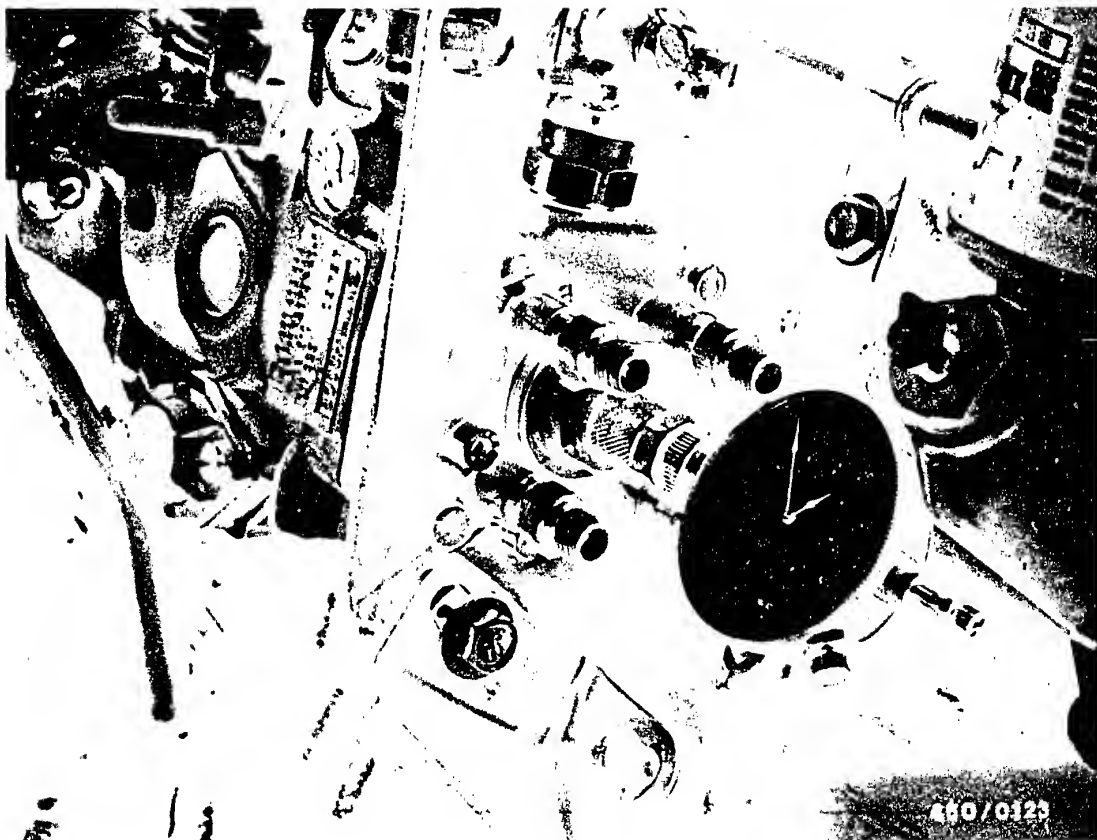
For this, release the clamping screw (1) on the fuel-injection pump. Pull the spacer piece (2) and the control lever (3) toward the hydraulic head.

Turn the spacer piece (2) by 90° and shove it back toward the drive shaft until the control lever (3) lies up against the stop bracket. In this position, the control device is switched off.

#### Note:

Do not release the locking screw (4) or a readjustment of the control device will be required.





Remove the fuel-injection lines. (Prevent the delivery valve holders from becoming loose by holding them with a wrench.)

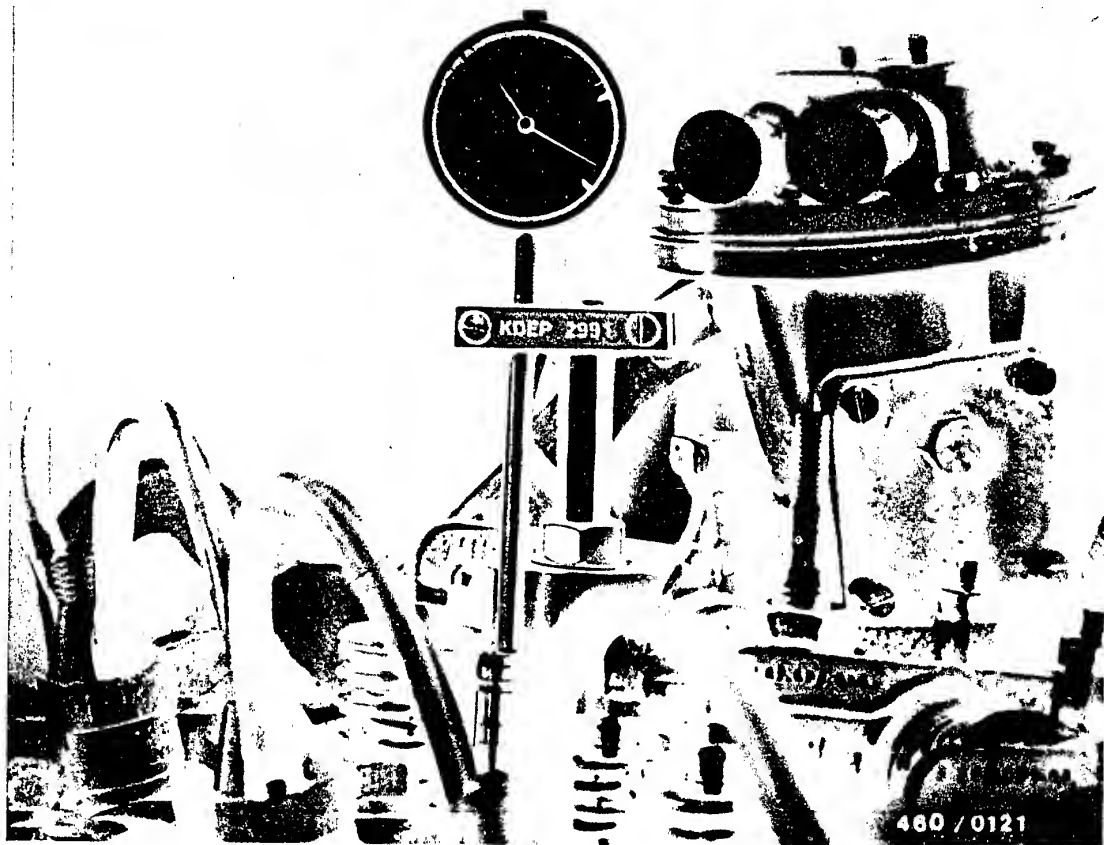
Remove the bleeder screw from the central screw plug (triangular screw) of the fuel-injection pump.

Screw measuring tool KDEP 1085 into the hole for the bleeder screw.

Put on dial indicator 1 687 233 011 or ..012 with the measuring base and prestress it approx. 3 mm.

Turn the crankshaft counter to the direction of engine rotation until the dial indicator indicates the BDC position of the fuel-injection pump plunger. Set the dial indicator at "0".

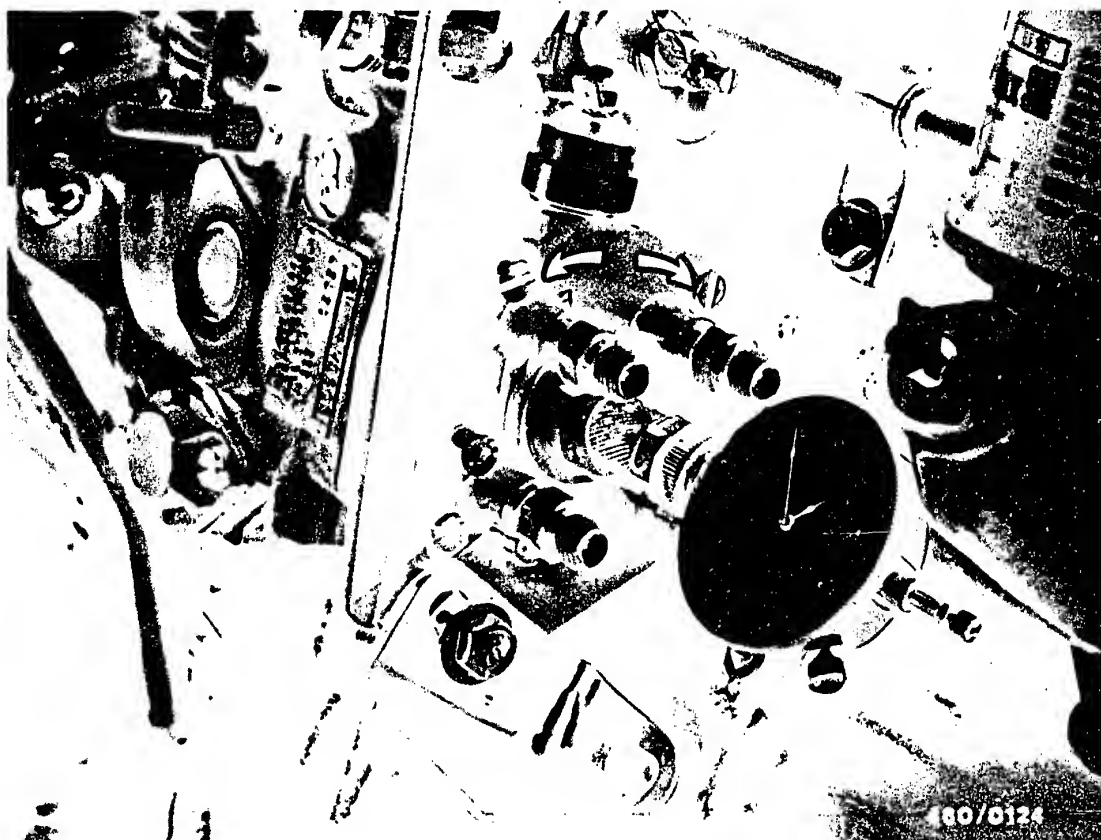




Turn the crankshaft in the direction of engine rotation until the dial indicator on the 4th cylinder exhaust valve shows a piston stroke of

505D XD3 2.5 l engine	0.72 mm
505/604 D-Turbo XD2S 2.3 l engine	0.80 mm
505/604 D-Turbo XD3T 2.5 l engine	0.89 mm
BTDC.	



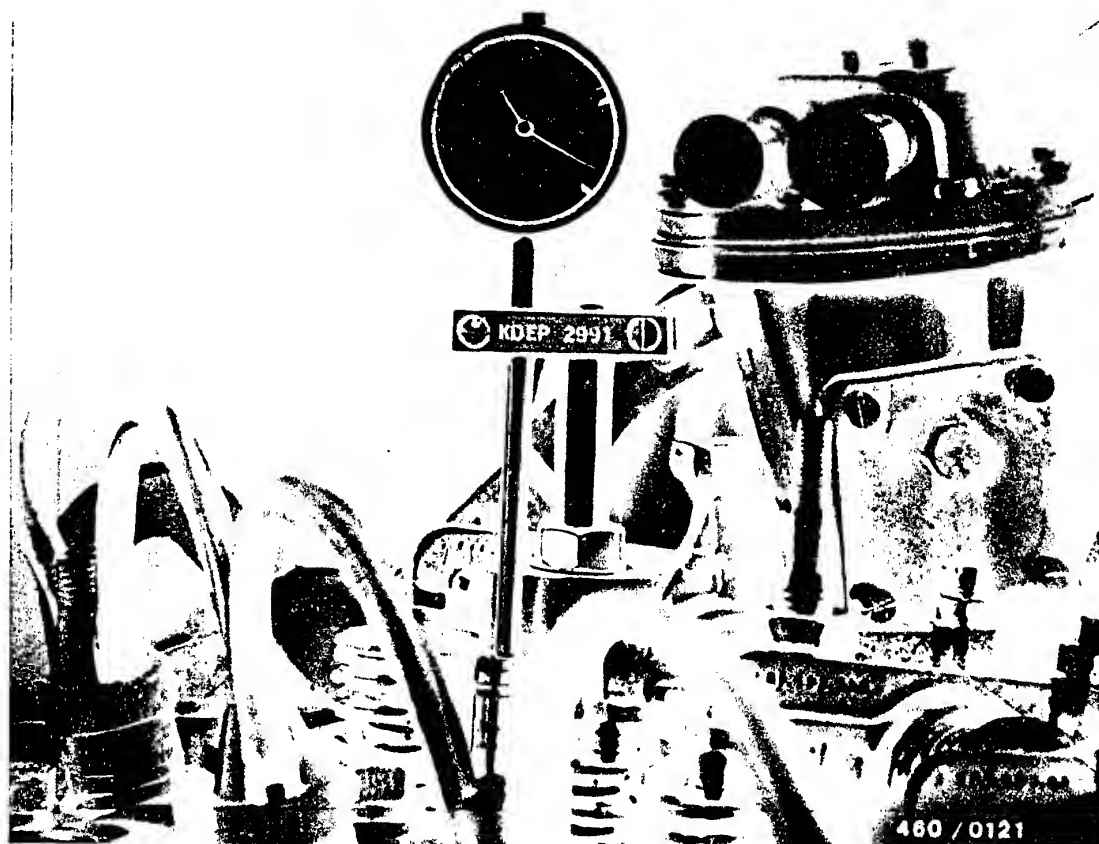


At the piston settings indicated, the dial indicator on the fuel-injection pump must indicate a pump plunger stroke of 0.28...0.32 mm ABDC.

If need be, adjust the stroke by pivoting the fuel-injection pump. To do this, the fastening screws for the fuel-injection pump (also on the support bracket) must be released.

Then retighten the fastening screws to 20 Nm.





- Checking adjustment of the fuel-injection pump with respect to the engine

Turn the engine crankshaft in the direction of engine rotation up to the TDC position of the 4th cylinder.

Check the 0-setting of the dial indicator on the exhaust valve.

Turn the crankshaft counter to the direction of engine rotation until the dial indicator indicates the stroke of approx. 7 mm (7 turns of the needle).





Turn the crankshaft in the direction of engine rotation until the dial indicator on the fuel-injection pump indicates a stroke of 0.30 mm.

In this setting, the 4th cylinder piston must stand

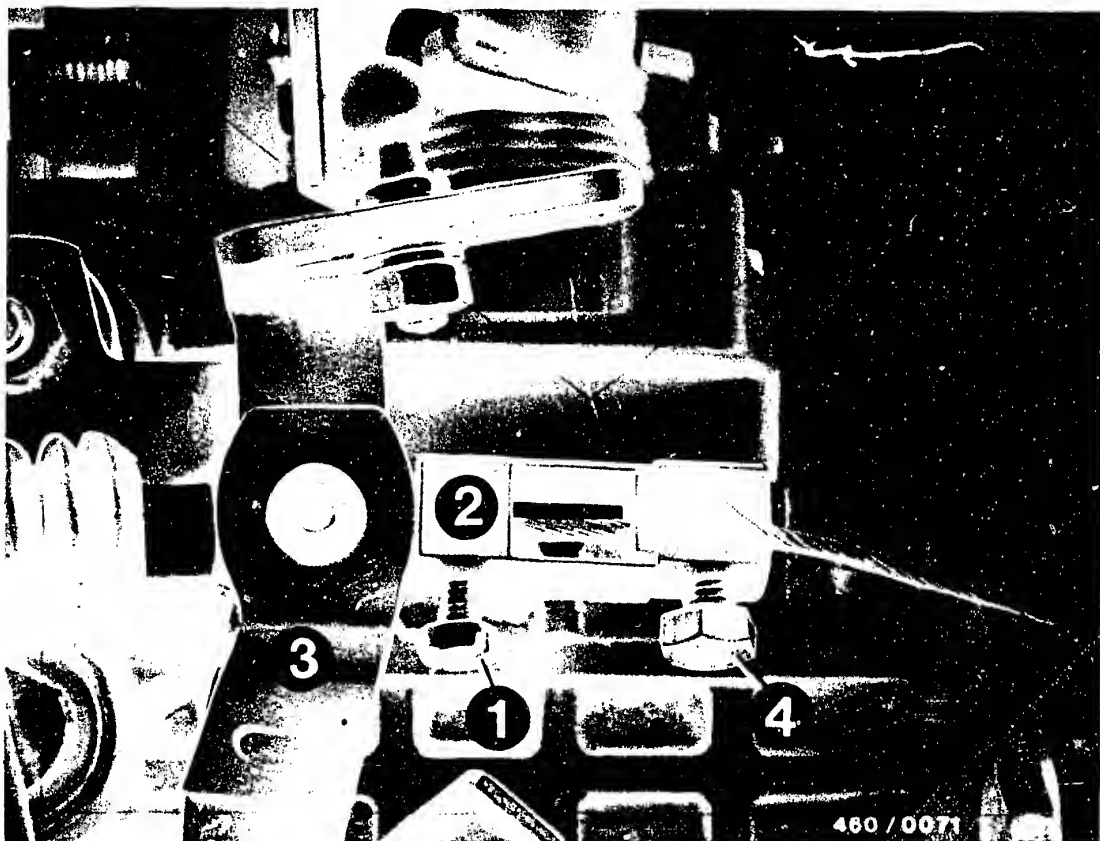
505D	
XD3 2.5 l engine	0.69...0.75 mm

505/604 D-Turbo	
XD2S 2.3 l engine	0.77...0.83 mm

505/604 D-Turbo	
XD3T 2.5 l engine	0.86...0.92 mm

BTDC.





XD 3 T - 2.5 l engine only

Pull the control lever (3) and the spacer piece (2) toward the hydraulic head.

Turn the spacer piece (2) by 90° and shove it back toward the drive shaft.

The spacer piece is in its initial position.

Tighten the clamping screw (1).

Note:

Do not release the locking screw (4) or a readjustment of the control device will be required.



Remove measuring tool KDEP 1085 and the dial indicator from the fuel-injection pump.

Put the bleeder screw on using a new copper gasket ring.

Bring the engine piston of the 4th cylinder into the TDC position. Remove measuring tool KDEP 2991 and the dial indicator. Put the valve spring and the upper spring plate on the 4th cylinder exhaust valve.

Using tool 8.0105 Y, press the valve spring down. While doing so, put in the exhaust valve collets. Relax the valve spring.

Turn the crankshaft so that the 1st cylinder exhaust valve just opens with the piston at BDC.

Press the valve spring of the 4th cylinder exhaust valve down using the spring plate.

Shove the rocker arm against the spring of the rocker arm shaft and put it into a horizontal position. In that position, guide the rocker arm on to the exhaust valve and tappet.

Remove tool 8.0105 Y.





### Check valve clearance

Check valve clearance only with engine cold. (min. 6 hrs. at rest)

Inlet valve: 0.15 mm

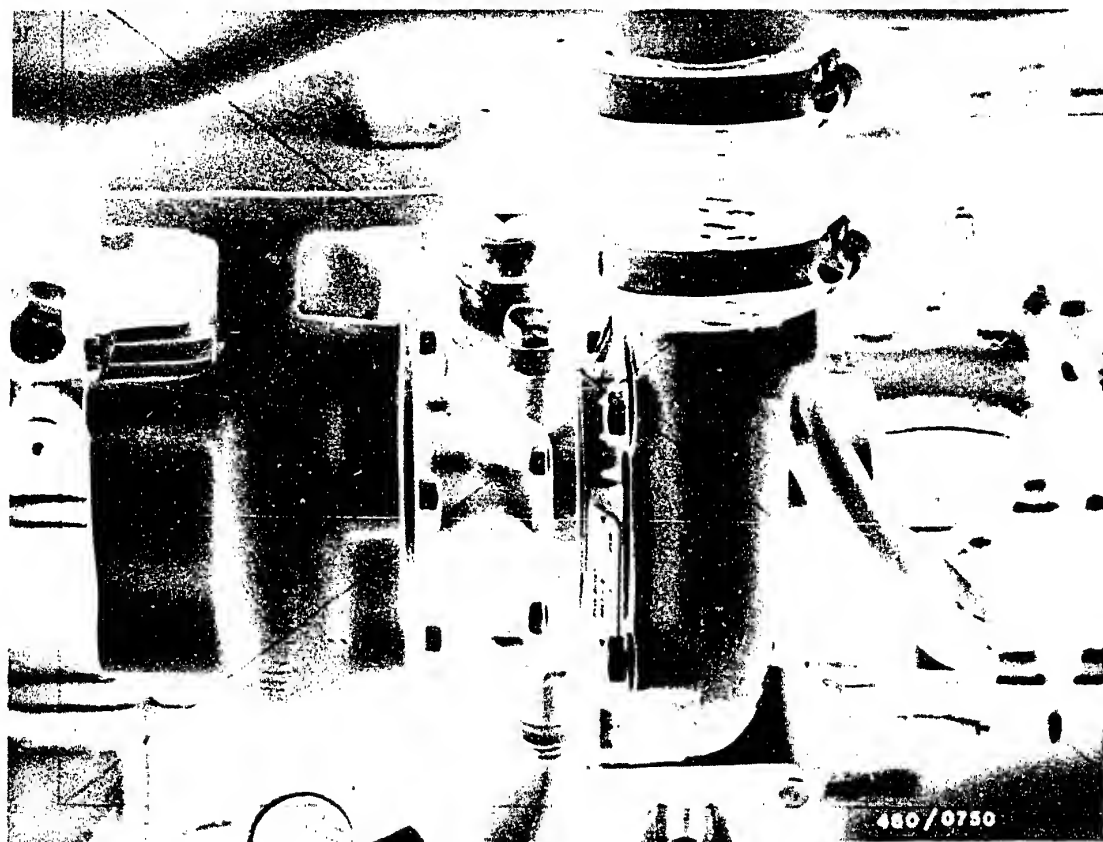
Exhaust valve: 0.25 mm

Put on the cylinder head cover, the fan funnel, and the line from the oil cooler to the oil filter.

Put in the sheathed-element glow plugs for the 3rd and 4th cylinders. Put on the fuel-injection lines. (Prevent the delivery valve holders from turning by holding them with a wrench.)

If need be, bleed the fuel-injection system.



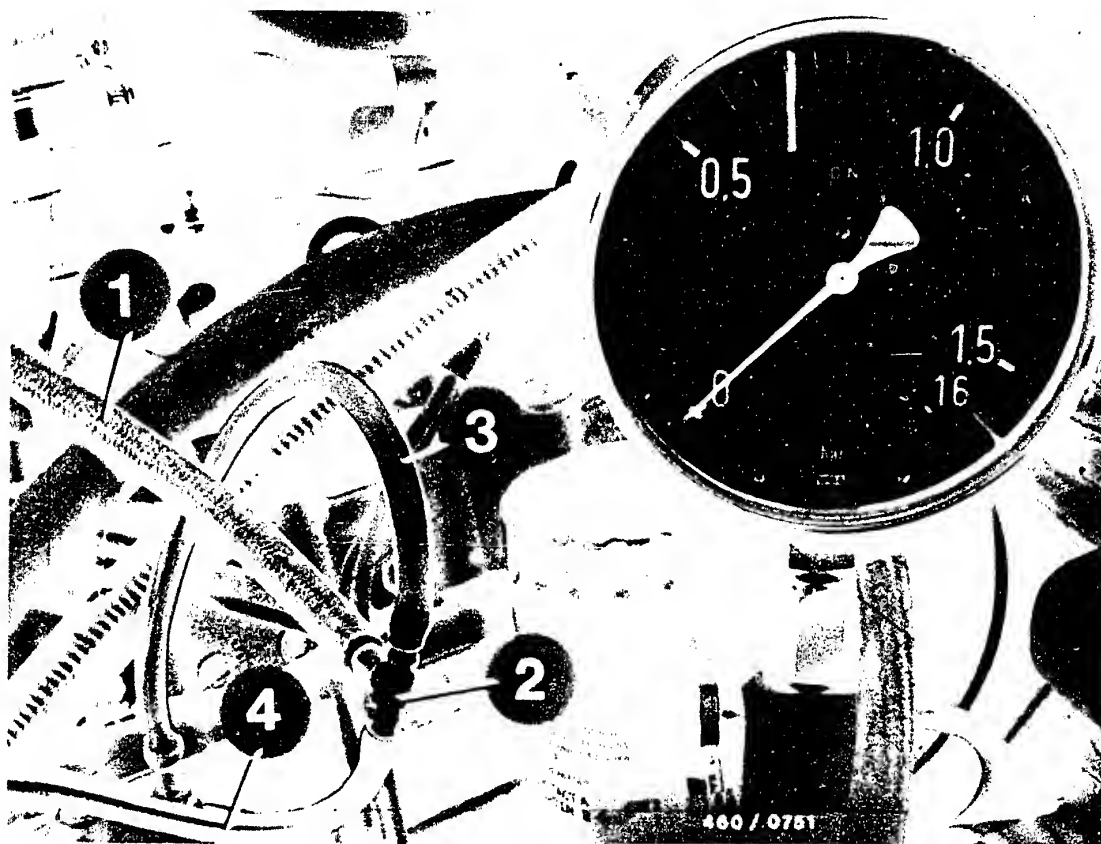


### 29. Checking charge-air pressure

When working on the turbocharger, remember that even very small particles of dirt can cause destruction of the charger.

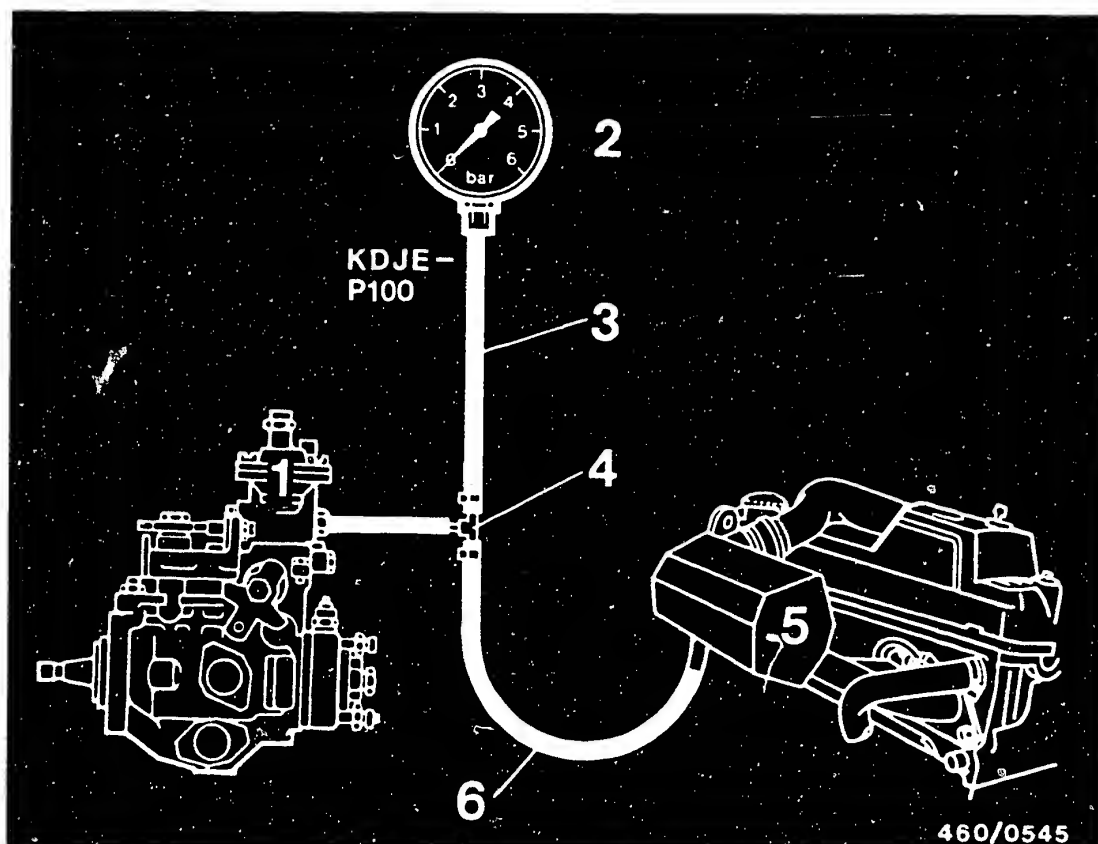
For that reason, never run the engine without an air filter.





- 1 = Connection hose
- 2 = Tee
- 3 = Commercially available hose
- 4 = Connection hose

To check the charge-air pressure, pressure tester KDJE-P 100, or a 0 ... 1.6 bar pressure gauge (e.g., Wika No. 4184) can be used (Figure).



### 29.1.1 Attaching pressure tester KDJE-P 100

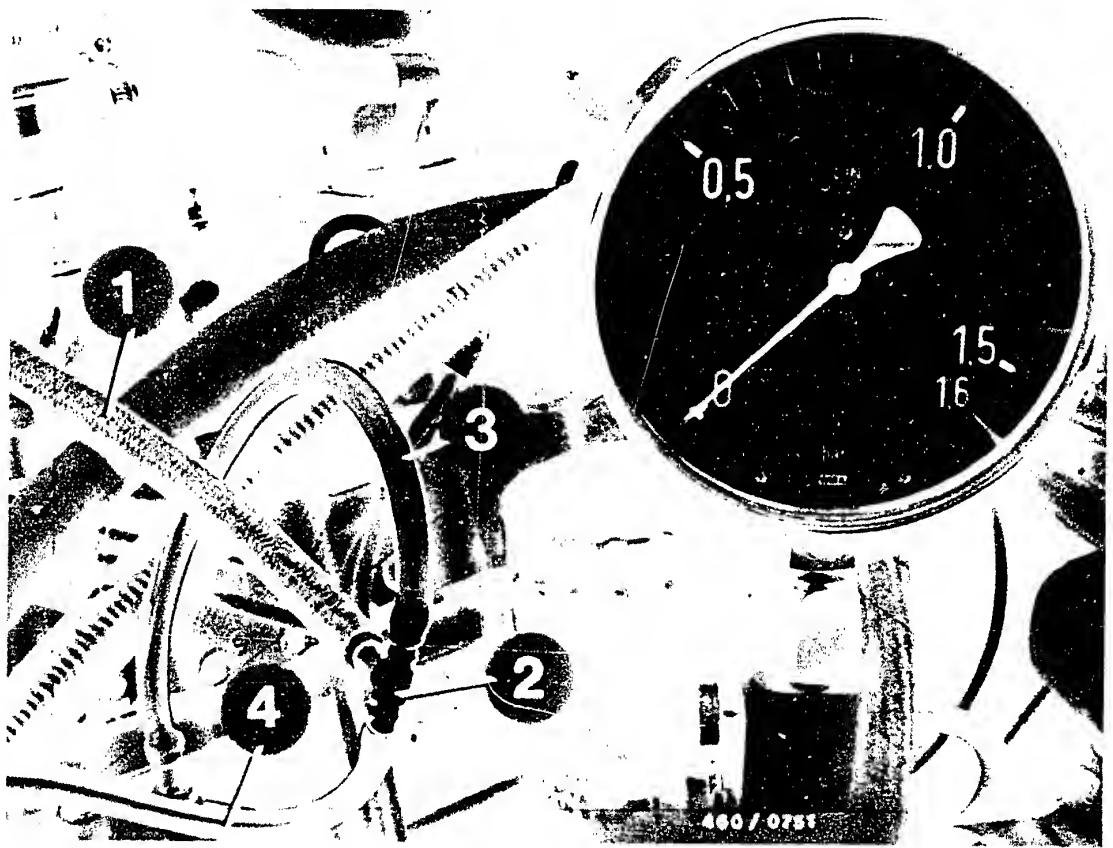
Disconnect the connecting hose between the charge-air pipe (5) and the manifold-pressure compensator for the fuel-injection pump (1) at the charge-air pipe.

Put on the tee (4).

Make connection to the charge-air pipe using a commercially available hose (6).

Join the connection hose (3) of the pressure tester (2) to the tee.





### 29.1.2 Putting on the pressure gauge for measurement of charge-air pressure

Disconnect the connecting hose (1) between the charge-air pipe and the manifold-pressure compensator of the fuel-injection pump.

Put on the tee (2).

Make the connection to the manifold-pressure compensator using a commercially available hose (3).

Put the connection hose (4) from the pressure gauge on the tee.



## 29.2 Measurement of charge-air pressure

The charge-air pressure is measured at standstill or on the chassis dynamometer.

### ● At standstill

Engine speed                      4800 min<sup>-1</sup>

Charge-air pressure    0.4...0.6 bar (XD2S-2.3 l eng.)

Charge-air pressure    0.6...0.8 bar (XD3T-2.5 l eng.)

### ● On the chassis dynamometer

Starting from 2000 min<sup>-1</sup> at full load

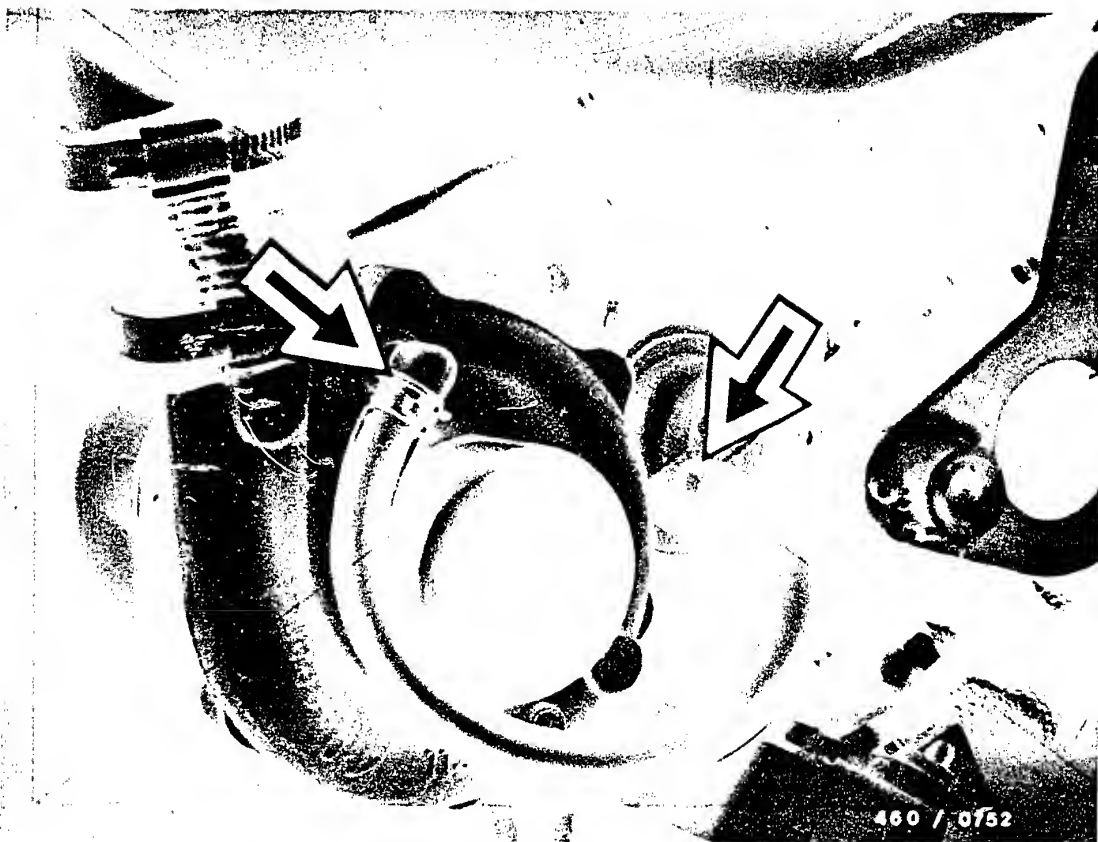
Charge-air pressure    0.4...0.6 bar (XD2S-2.3 l eng.)

Charge-air pressure    0.6...0.8 bar (XD3T-2.5 l eng.)

### Note:

In order to evaluate the exhaust gas turbocharger, it is necessary that the start of fuel delivery and the nozzle opening pressure be correctly adjusted, that there be no leaks on the intake or exhaust ends, and that the mechanical condition of the engine (valve clearance, compression pressure) be in order.





### 29.2.1 Charge-air pressure too high

Cause of too high charge-air pressure:

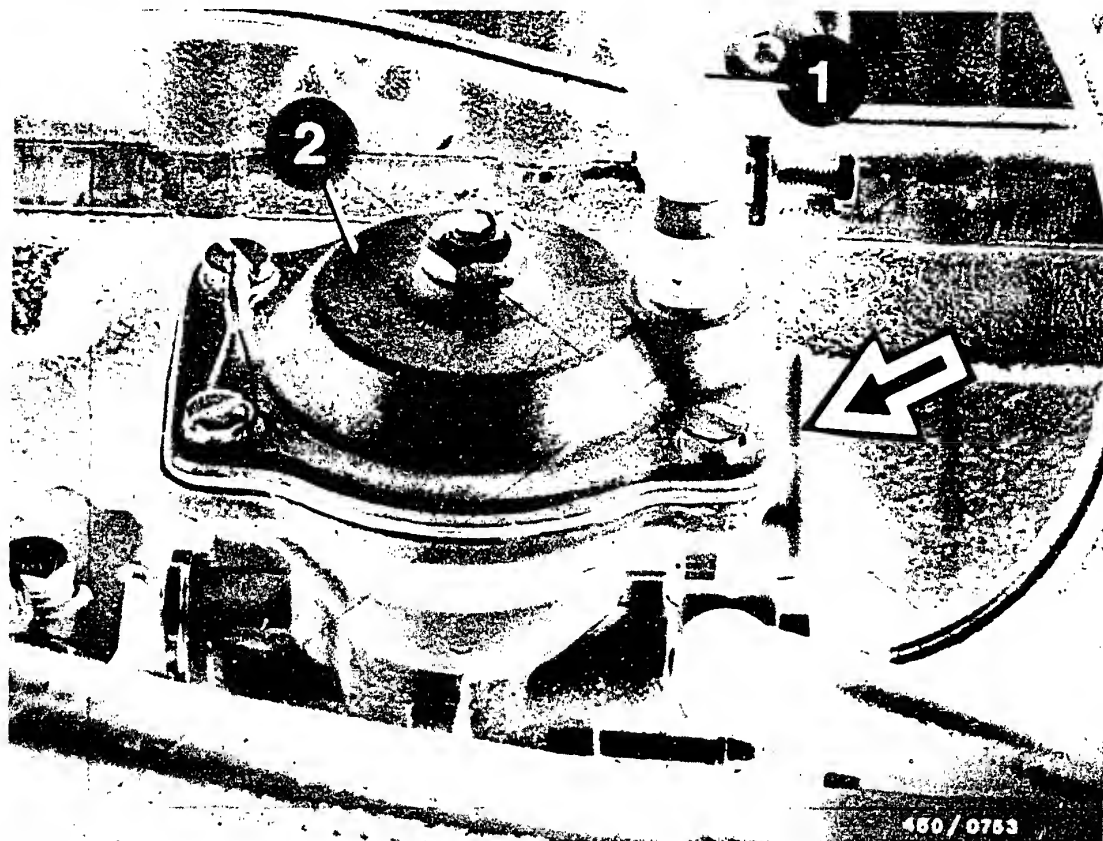
- Line to the wastegate loose or defective (arrows).
- Diaphragm in the wastegate defective (\*).
- Wastegate valve has seized, closed (\*).
- Wastegate valve incorrectly adjusted (\*).

\* = Take out and replace the exhaust gas turbocharger.

#### Note:

After putting in a new exhaust gas turbocharger, fill the charger with oil and run the engine for approx. 1 minute at idle so that the oil supply to the charger is assured.



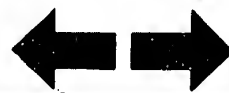


### 29.2.2 Charge-air pressure too low

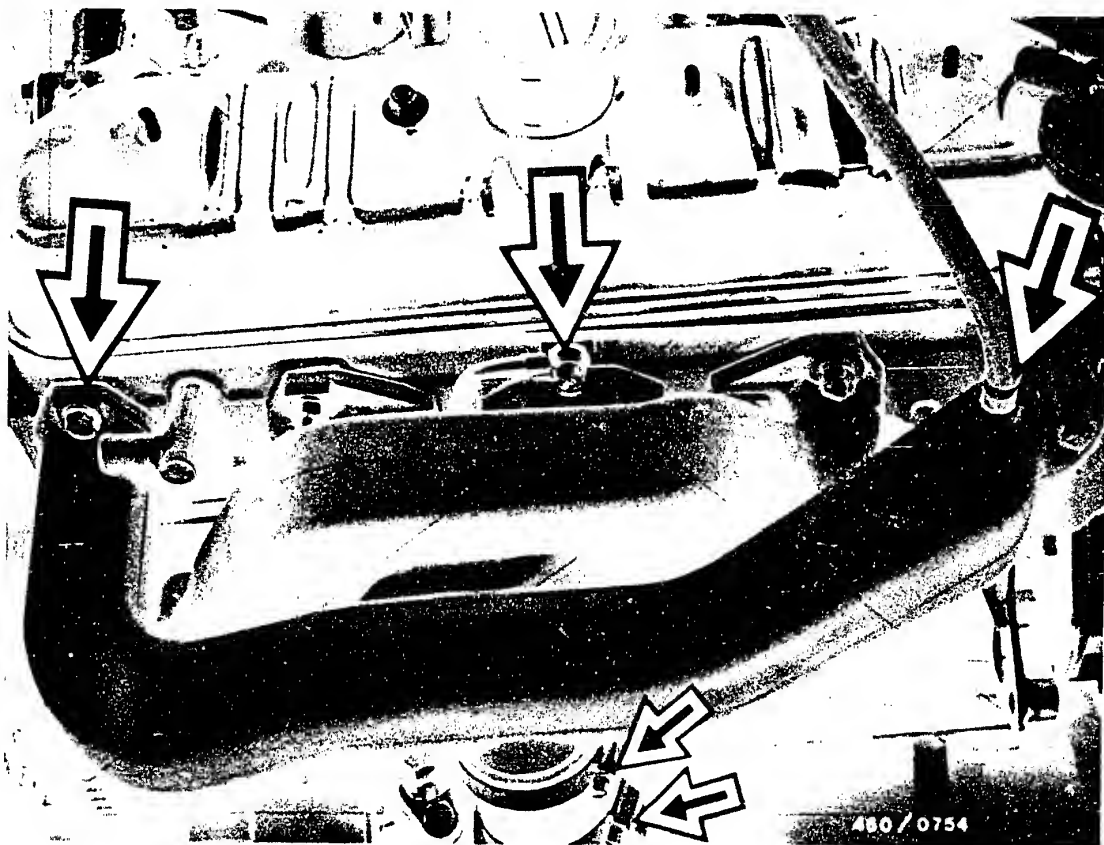
If the charge-air pressure is too low, check the following points for leaks:

- Connecting hose (1) between the charge-air pipe and the manifold-pressure compensator (fuel-injection pump).
- Air line on the manifold-pressure compensator (arrow) may be clogged.

Diaphragm in the manifold-pressure compensator (2).







- Gasket between the charge-air pipe and the engine block (see Figure, arrows at top).
- Connecting hose between the compressor outlet and the charge-air pipe (arrows at bottom).
- Additional causes for too low charge-air pressure:
  - Air filter (dirty).
  - Wastegate, incorrectly set \*.
  - Turbine shaft tends to seize.
  - Exhaust system clogged.

\* = Take out and replace exhaust gas turbocharger.



# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

PEUGEOT 604 D TURBO

VDT-I-PEU 014 En

with VE .. F ..

10.1980

distributor-type fuel-injection pump

Supersedes Ed. 6.1979

The VE..F.. distributor-type fuel-injection pump in the Peugeot 604 D with the XD 2 S engine is fitted with the following equipment: solenoid-operated shutoff device together with an additional mechanical shutoff device, manifold-pressure compensator (LDA), quiet-idle device (in the hydraulic head), load-dependent start of pump delivery (LAFB) and delivery-valve holder with integrated reverse-flow throttle.

### Engine data

Water-cooled, 4-cylinder, 4-stroke diesel engine with whirl chamber (Ricardo Comet 5). Power output 59 kW (80 DIN HP) at a rated engine speed of 4150 min<sup>-1</sup>. Engine swept volume 2.3 l, firing sequence 1-3-4-2, compression 21:1.

### Fuel-injection equipment

Distributor pump (for vehicles with manual-shift transmission)	0 460 404 003 - VE 4/10 F 2075 R 40 (approx. qty. 6,000 delivered)
As from September 1979	0 460 404 008 - VE 4/10 F 2075 R 40 - 2
As from June 1980	0 460 404 011 - VE 4/10 F 2075 R 62
Distributor pump (for vehicles with automatic transmission)	0 460 404 004 - VE 4/10 F 2075 R 40 - 1 (approx. qty. 2,000 delivered)
As from September 1979	0 460 404 009 - VE 4/10 F 2075 R 40 - 3
As from September 1980	0 460 404 018 - VE 4/10 F 2125 R 62/2

The modification refers to the functioning of the governor. Pumps .. 003 and .. 004 have idle-speed spring combinations. Pumps .. 008 and .. 009 have idle intermediate-spring combinations with which a strong puff of exhaust smoke is prevented when the engine is suddenly accelerated from idle when the vehicle is standing still. This is in compliance with French Technical Control Board Regulations.

Pumps .. 003 and .. 008 are fully interchangeable with one another, as are pumps .. 004 and .. 009.

Pump .. 011 and pump .. 018 are not interchangeable with their predecessor models.

**BOSCH**

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**N1**

Motor Vehicle Service Information

Peugeot 505D, 505/604 Turbo-Diesel



### Fuel filter

The Purflux-Filter CP 30 ADK is fitted.

The appropriate filter element has the Bosch Part Number 1 457 431 028.

<u>Nozzle-holder assembly</u>	old (as from 5/80)	new (as from 6/80)
Nozzle-and-holder assembly comprising:	0 432 217 060	0 432 217 069
Nozzle-holder assembly	0 430 211 046-KCA17S33/4	0 430 211 049-KCA17S38/4
Nozzle	0 434 250 011-DNOSD1510	0 434 250 011-DNOSD1510

Opening pressure 130+5 bar overpressure

See the Microfiche for the complete Bosch equipment.

### Notes for after-sales service

The normal after-sales service is to be carried out for this VE..F.. distributor pump. The appropriate technical documentation has already been published.

A supplement is to follow for the Repair Instructions due to the quiet-idle device incorporated in the hydraulic head.

Test specifications can be obtained from KH/VSK 1, if required, until they are issued on microfiche.

### Tools for repair and testing

The conventional tools listed in the catalog sheets KD-EP 11 are required for the repair of this VE..F.. distributor pump.

### Tools and equipment required for testing

Timing-device-travel measuring device	1 688 130 139
Setting throttle	1 688 130 132
For checking the charge-air pressure:	
Pressure-reducing valve for compressed air, with pressure gauge 0...4 bar	Commercially available
Pressure gauge 0...1.6 bar (Quality grade 1.0)	Commercially available
Dial indicator (scale division 0.01 mm)	1 687 233 012
Measuring-stem thread M 3	

### Exchange pump

The distributor pumps 0 460 404 008, ... 009, ... 011 and ... 013 have been included in the Exchange Program with the Index No. 090.

### Repair times

The work-unit figures for repairing and testing the VE..F.. distributor pump fitted with the LDA have not yet been issued. Maximum values when the pump is dismantled completely: 45 AW.

Checking and adjusting together with the repair of a minor fault (for instance, a leak): 20 AW.

These AW are only provisional.



### Timing the pump to the engine

The distributor pump is timed according to the dial-indicator method.

### Setting points

Pump: At a plunger stroke of 0.30 mm after TDC.

Engine: 10° BTDC  $\approx$  0.80 mm BTDC.

Please get into touch with the Peugeot representative in your area and ascertain the sales figures for these vehicles. Please make every effort to ensure that your workshop carries out impeccable and speed repair work on the fuel-injection system of these vehicles.



# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

PEUGEOT 604 D

VDT-I-PEU 021 En

with VE..F.. Distributor-type fuel-injection pump

5.1981

With increasing mileage, it can happen with these vehicles that complaints are received that the "Engine is putting out black smoke".

The reason for this complaint is that the delivery quantity has increased by 2-3 cm<sup>3</sup>.

It is not necessary to remove the pump in order to alleviate this fault. It suffices to unscrew the full-load delivery screw by 0.2 mm. The screw is then to be locked again using locking paint.

Within the warranty period, this work is to be carried out for the customer free of charge and a warranty claim submitted to KH/VKD 3.  
Time for repair is max. 1 AW.

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**N4**

Motor Vehicle Service Information

Peugeot 505D, 505/604 Turbo-Diesel



# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

PEUGEOT 505 D TURBO, 604 D TURBO  
with VE..F.. distributor-type fuel-injection pump

VDT-I-PEU 022 En  
5.1981

We have received some complaints about blue smoke in connection with the above-mentioned vehicles.

The cause of this complaint can be:

1. incorrect setting of the load-dependent start of pump delivery (LFB).
2. coking of the injection nozzles

### Remedy:

for point 1 : Set the start of pump delivery (LFB) at  $1400 \text{ min}^{-1}$  as in test sheet.

for point 2 : Exchange the fuel-injection nozzles.  
Instead of nozzles 0 434 250 011, nozzles 0 434 250 109 should be used.

During the guarantee period the setting of the load-dependent start of pump delivery (Lfb) will be carried out without any charge for the customer. The pump should be forwarded to KH/VKD 3 with a warranty claim form. The customer will be charged for exchanging the nozzles.

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**N5**

Motor Vehicle Service Information  
Peugeot 505D, 505/604 Turbo-Diesel



# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

Fuel-injection equipment

PEUGEOT 505 D TURBO, 604 D TURBO

VDT-I-PEU 024 En

with VE distributor fuel-injection pump

9.1983

VE 4/10 F 2075 R 62

With the above-named vehicles, it is possible for heavy smoke to be developed when the engine is running at idle. This is due to sooted nozzles resulting from unfavorable operating conditions.

In most cases, the fault can be remedied by taking the following measures:

Fit nozzles 0 434 250 109 (DNOSD 252) instead of nozzles 0 434 250 011 (DNOSD 1510), and set them to 150 bar. When installing, it is imperative that the heat-conducting washers PR 1981.02 and the copper seals PR 1981.05 are renewed.

New delivery-valve holders 1 463 370 342 (refer to Service-Parts Microfiche, Pos'n 58) with throttle bore dia. 0.6 mm must be fitted to the distributor pump. The delivery-valve holders can be exchanged without it being necessary to remove the pump. The pressure spring (Pos'n 56) and the spacer ring (Pos'n 57) do not have to be replaced by new ones. The tightening torque for the delivery-valve holders is 45-55 Nm.

The delivery-valve holders will be fitted as standard as from FD 347.

The replacement of the nozzles and the installation of new delivery-valve holders must be charged to the customer. This also applies during the warranty period.

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**N6**

Motor Vehicle Service Information

Peugeot 505D, 505/604 Turbo-Diesel



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